

# Regulatory Policy Implications of Different Levels of Symmetry

Jorn van STEENIS

Vodafone, Regulatory and Strategy team, The Netherlands<sup>1</sup>

**Abstract:** Rather than a general pan-European trend towards more symmetry, the European electronic communication markets face increasingly a dichotomy between countries with significant intermodal competition and countries without. Although researchers have suggested that there is a (negative) causal relation between the level of access regulation and investment, this conclusion is not supported by any empirical findings and is likely to be incorrect. The real major determinant for the investment in NGA seems to be the pre-existing susceptibility of countries to platform competition, which concurs with the tendency to symmetry. Regulators should seek to optimally use this susceptibility, and avoid a one-size-fits-all approach. Based on a classification of markets by the degree of susceptibility to platform competition this paper tries to provide guidance as to how regulatory policy can ensure optimal outcomes for consumers in various types of markets.

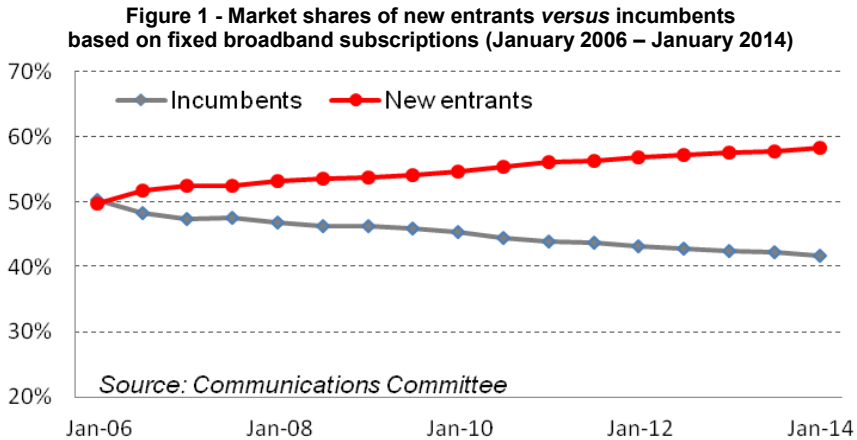
**Key words:** access regulation, symmetry, competition, regulatory policy, platform competition.

Currently there seems to be a perception with some that the European electronic communication industry is on the brink of changing from markets with a highly asymmetric market structure to a much more symmetric market structure. This perception should be nuanced for two important reasons. First, the mobile market structures in the various member states have not been characterized by the kind of asymmetries observed in the fixed markets. Therefore, if there would be a trend towards a more symmetrical market structure this should be confined to the fixed markets. With regard to mobile markets a high degree of symmetry is nothing new. Second, the observed increasing symmetry in the fixed markets is largely based on superficial observations. This is illustrated

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<sup>1</sup> This paper was written by the author in his personal capacity and does not necessarily represent the views of Vodafone.

by the graph below, showing the decline in market share of fixed incumbents.



This graph shows that at the EU level, only 42% of broadband subscriptions is offered by incumbents. However, this market share is in the presence of access regulation. In case where the market share of incumbents in absence of access regulation were be shown, the market share of incumbents would be in the range of 70-75%.<sup>2</sup> The market share in absence of regulation of fixed incumbents of well over 70% illustrates that the fixed markets – on average – in Europe has not quite tipped over towards a high degree of symmetry. Against the backdrop of market shares of alternative operators still being under 30%, the mentioned symmetry trend should not be exaggerated. In most of the member states a situation of sustainable competition independent of access regulation is not in any way near. In fact, there is just a limited number of member states in which alternative infrastructures have a market share (in absence of regulation) that is comparable to the incumbent's market share. These countries are characterized by a relatively high degree of inter-platform competition, mainly based on cable-infrastructure. However, in most countries cable infrastructure is, at best, a regional phenomenon. The only member states with more than 80% coverage by cable are the Netherlands, Belgium, Portugal and Malta. In a number of other member states cable could

<sup>2</sup> This is under the assumption that the market share of access seekers would fall to the incumbent operator in absence of regulation. See: Communications Committee, <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%202014%20MARKETS%20.pdf>

become more important, both as a result of consolidation and increasing penetration.

In the few member states with a nearly national coverage, the increasing symmetry has spurred debate about the appropriate regulation, and the justification of such regulation. These discussions have been followed with interest by other member states that have a substantial cable footprint that is gaining market share. In particular, for member states with strong regional cable footprints, similar discussions could unfold (based on more local market definitions) as in countries such as Belgium or Netherlands.

Resuming, it can be concluded that there is not a general European trend towards more symmetry in fixed markets. Rather, the real phenomenon seems to be that there is an increasingly dichotomy between countries with a tendency towards more symmetry (where we observe strong platform competition) and countries that stay highly asymmetrical. Although both literature and the European framework have tended to apply a "broad brush approach" to different markets, in this paper we will find that it is important to clearly distinguish more symmetrical markets from less symmetrical markets. In this paper we explore which regulatory policy is most effective in different market situations from both a static and a dynamic welfare perspective. From an overall welfare perspective we consider the level of investments in NGA networks the most important, as we will explain later.<sup>3</sup> The term NGA has become a very confusing one. In this paper we use the term as referring to technologies such as DOCSIS 3.0 and beyond, FttC and FttH. However, from a longer term perspective we consider FttH as the most future proof type of access technology that will best fulfil the needs of advanced economies. Although unbundling is sometimes also regarded as a form of facility based competition, as it involves a certain level of infrastructure investment, in this paper we limit the definition of facility based competition (or infrastructure competition) to competition between networks that is fully independent of access regulation (i.e. sustainable). In the context of this paper all modalities of competition that are dependent on (some form of) access regulation are defined as "service competition". That means that in this paper, both unbundling, wholesale bitstream access and resale (i.e. all rungs of the ladder of investment) are comprised under the term "service competition".

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<sup>3</sup> As the demand elasticity for broadband is generally considered low (as broadband is in advanced economies considered as a necessary utility) the deadweight loss that can be associated with high prices is relatively small.

In order to analyse a more differentiated approach based on different market circumstances, in this paper we define three categories of market situations based on the level of platform competition:

- Category 1: no platform competition (high degree of a-symmetry),
- Category 2: limited platform competition (medium degree of a-symmetry),
- Category 3: strong platform competition (low degree of a-symmetry).

## ■ **Inter-platform competition versus intra-platform competition**

### **Existing empirical research fails to prove causal relations**

In order to be able to understand how access regulation affects market outcomes it is crucial to distinguish markets with a certain degree of inter-platform competition (or, in other words, more symmetrical markets in absence of regulation) from markets that are mainly based on intra-platform competition (and that are highly asymmetric in absence of regulation). It seems obvious that the presence of e.g. a (near) national cable footprint can be a defining factor in the competitive dynamics in a given country. Many studies, however, seem to underestimate this defining role and make the classical mistake of mixing up correlation with causality; e.g. when assessing the impact of regulation on NGA investments.

BRIGLAUER, FRÜBING & VOGELSANG (2015) provide a meta-research covering various quantitative studies that analysed the impact of regulation on NGA-investments. Most of the studies find that successful service competition correlates with less NGA-investment. This correlation is sometimes interpreted as "service competition hinders NGA investment". However, the correlation can also be explained very differently. For example, Industry Insights (2014) explains that service competition may be less effective in countries with two legacy infrastructures because new entrants face more competition from alternative networks such as cable. Higher investments in such a context can be explained by strong inter-platform competition. An additional explanation for the observed correlation could be that regulators in countries with two legacy infrastructures may be less inclined to impose strict access regulation. Examples of studies that confuse

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correlations with causal relations are JEANJEAN (2013) and BRIGLAUER (2014). The latter concludes:

"We find strong evidence that previous broadband access regulations imposed on first-generation (legacy) infrastructure exert a significant and negative impact on aggregate NGA investment incentives."

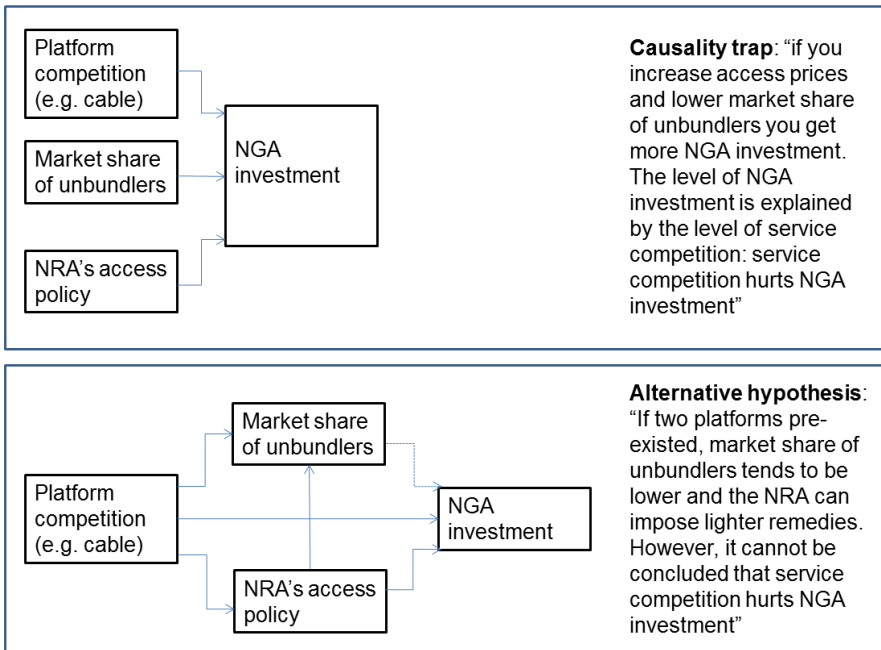
However, this strong conclusion is entirely based on the findings of a correlation and the study assumes (rather than robustly proves) that this corresponds to a cause-effect relation.

Based on the correlations generally found between investment and access regulation (see e.g. WALLSTEN, 2009) a possibly more plausible (but also not proven) hypothesis would be that the presence of two competing platforms is a main driver of investments, and that both the NRA policy and the competition from alternative DSL-operators is highly determined by the pre-existing duopolistic market structure. In other words, the type of access regulation and the success of service competition might very well be dependent on the pre-existence of infrastructure competition, and not the other way round. Similarly, inter-platform competition is not the result of the regulatory policy, but regulatory policy is the result of the given market structure. We should note that the pre-existing susceptibility of countries to platform competition is not just determined by the presence of a strong cable footprint. Another factor, which is also a form of a pre-existing "inheritance" that determines the possibilities for platform competition and the attractiveness of investment in NGA is the availability of ducts. In countries with extensive and easy accessible duct-infrastructure (Spain and Portugal, and to a lesser extent France) costs to roll-out alternative FttH-networks can be in the range of under 200 euro per home passed (See e.g. WOOD, 2012), which is a striking difference with the more usual price range of 700-800 euro. This also illustrates clearly that the absolute level of investments per capita in NGA as such should not be considered as the sole measure of success, as starting positions in countries may differ widely and the same level of investment in the one country yields much better outcomes than in another country.

An important conclusion from the above, is that the way correlations are interpreted fully determines the conclusions that are drawn. The figure below illustrates this point. It becomes clear from this illustration that simple linear regressions do not suffice for examining causal relations and more advanced techniques are required. LEMSTRA & VOOGT (2014) and LEMSTRA *et al.* (2015) confirm this and argue for more use of structural equation modelling. Looking at the available literature we need to draw the

conclusion that a lot of confusion has arisen about the causes and effects. Given the fact that it is impossible to draw an unambiguous conclusion, in the context of this paper we have chosen the more complex causal relations ("alternative hypothesis" in the figure below) as the most plausible of the two, and will use this as the underlying assumption in our further analysis.

**Figure 2 - The correlation between the intensity of access regulation and NGA investment does not necessarily imply a simple cause-effect relation**



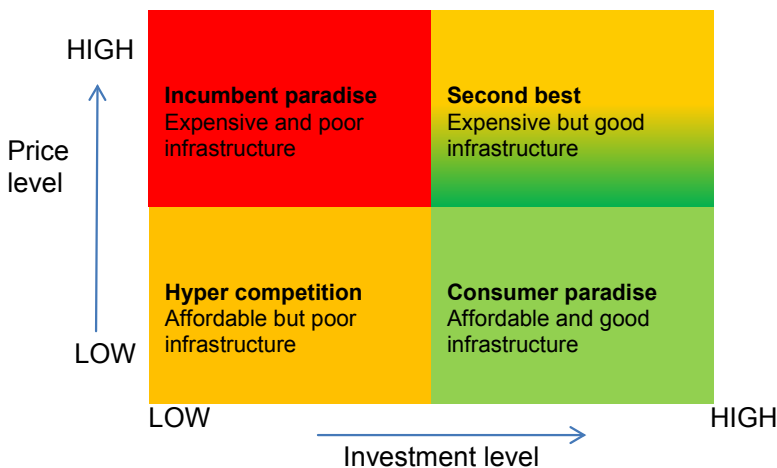
### A one-size-fits-all approach unlikely to be effective

One implication of the previous section would be that, if our assumption about the cause-effect relations is true, it does not make sense to apply a one-size fits-all approach. It also would imply that the role of access regulation as a "making or breaking factor" should be brought back to more realistic (smaller) proportions. Assuming that investments are predominantly explained by the level of platform competition, we will now analyse at a higher abstraction level what regulatory policy is most effective in which market situations. If platform competition plays a defining role, it would make sense to categorize markets based on the level of platform competition.

Such a categorization could facilitate a further exploration with regard to what regulation is appropriate in a given market category. In other words, to what extent is it likely that different market situations require a differentiated regulatory approach?

To move away from the "one-size fits all" approach, and to provide some leads to make more optimal trade-offs between static and dynamic efficiency, we present a simple conceptual model. This model is similar to conceptual approaches proposed by CANOY & ONDERSTAL (2003), VAN GORP *et al* (2012) and ECORYS *et al* (2011). This model allows to classify the current situation and define where the focus should lie in order to migrate towards a more optimal situation. The two axes are the level of competition (left axis) and the level of investment (right axis).

**Figure 3 - Simple classification of possible market outcomes based on price and investment**



The figure shows the following quadrants. In order of their rating in terms of total welfare (worst-best):

*Incumbent paradise*: shows a situation where prices are very high, but investment is very low. This situation is likely to be also associated with productive inefficiency. This is typically the situation of a former state monopoly that has no incentives to invest and does not face any effective (access) regulation.

*Hyper competition*: this situation is similar in terms of outcome as the "incumbents paradise, in the sense that there are significant welfare losses

as a result of underinvestment. However productive and allocative efficiency might be more optimal as prices are low (lower deadweight loss) and as a result of downstream competition productive efficiency is improved. This situation is typical for the situation of a former state monopoly with effective access regulation. From a static welfare perspective this situation scores higher than the "the incumbent's paradise" but from a dynamic welfare point of view both situations are equally poor.

*Second best:* this situation scores high from a dynamic point of view, as the investment level is high. From a static point of view it scores less well. However, it is likely that the negative impact on static welfare is largely offset by the positive dynamic impact. As the demand elasticity for broadband is generally considered low (as, in advanced economies, broadband is considered a necessary utility) the deadweight loss that can be associated with high prices is relatively small. The "economic damage" from high prices is probably much lower than the "economic damage" that would come from underinvestment in infrastructure (also given the indirect effects of advanced networks on the broader economy; see e.g. BIAGI, 2013). However, this situation can imply that much of the surplus is shifted from consumers to the producers, and that certain groups in society will be deprived from access to broadband Internet. This scenario can be associated by competition between two platforms without effective (access) regulation, such as in the US.

*Consumer paradise:* In this situation there is both competition and sufficient investment. Both from a dynamic and a static point of view this scenario delivers satisfactory outcomes. This outcome can be e.g. associated with a combination of platform competition and access regulation that does not remove investment incentives. Also markets with sufficient platforms to sustain effective competition can lead to this situation. For regulators it is very challenging to reach this outcome, as too intrusive access regulation can harm the investment incentives of the networks. If this is the case, it is likely that regulation does more harm than good (i.e. the social costs of significantly discouraging investment are not offset by low consumer prices). A regulator that focuses primarily on static welfare is in this situation probably likely to do more harm than good.



## ■ Potential negative impact on investment from service competition

Generally the difference between the incumbent's pre-investment and post-investment rents is considered as the ultimate factor that determines whether the incumbent will decide to invest or not. This increment between pre-investment and post-investments rents is also used to explain the inverted u-shape relation between innovation and competition (see e.g. AGHION *et al.*, 2005). It is likely that access regulation can influence this difference, and as a result can negatively affect investment (in the case where post-investments rents are too low to invest). As such, the intensity of access regulation could need to be reconsidered in order to limit potential negative impact or even enhance this difference.

The latter idea, enhancing the incentives to invest by increasing the difference between pre- and post-investment, seemed to have been at the heart of the European Commission's recommendation on non-discrimination and NGA investment (European Commission, 2013). Whereas access regulation for legacy networks would be kept at LRIC+, the Recommendation implied that NGA wholesale prices would be set at retail-minus. The thinking behind this was that incumbents could set their retail prices for NGA higher, thus ensuring higher profitability of the NGA investments.

From a theoretical perspective, there is no reason to believe that higher (access) prices (or withdrawing unbundling regulation altogether) will always, and by definition, encourage incumbent operators to invest. Too low (access) prices will hinder investment if they do not allow for a reasonable return on investment or if they lead to a lower increment between the pre- and post-investment rents. In particular, in markets where there is a strong replacement effect - or Arrow effect; see TIROLE (1988, p. 392), keeping incumbents from investing, even the highest (access) prices will not induce the incumbent to invest. In such a situation the only effect of higher (access) prices will be a shift from consumer to producer surplus and possibly a welfare loss due to a dead weight loss. It could even be argued that in those markets, where incumbents will not invest in the case of either high or low prices, the best option is to have low (access) prices. In such a case a negative dynamic welfare would be unlikely (no investment to be expected anyway) and the low prices would at least lead to a positive static welfare impact. However, the real challenge in such a situation would be to move to the right: towards either the yellow-green "second best scenario" or the

green "consumer paradise". Unfortunately neither those scholars advocating high access prices (or no unbundling at all) nor those who favour unbundling, provide the magic weapon to achieve this. It could well be that such cases should be qualified as market failure, and can only be remedied by some form of public investment.

In markets with a certain degree of platform competition however, the concept of pricing flexibility of the Commission could contribute to some (possibly very limited) extent, to increasing investment incentives. In markets with considerable platform competition, too low post-investment access prices could lead to decreasing post-investment rents, making it less attractive for the infrastructure operator to invest. In other words, in case of low access prices, if the rents in the market are decreased, the platform competitor will have less incentives to defend the market against the other platform competitor. However, if rents are lowered but still attractive, both platform competitors will have sufficient incentives to invest to defend their part of the market. The question that needs to be answered is, at which level of access prices there will be a significant negative impact on investment incentives. In this equation it should also be taken into account that in a two player market it might not necessarily be the case that, even in the case of very high post-investment rents due to high prices, both operators will invest unbridled as there might be a mutual understanding that this strategy will lead to an arms race that will only decrease the post-innovation rents. It is likely that there is an access price point at which unbundling will not harm investment and that at least ensures that consumer prices are constrained. It might well be (but not necessarily so) that this price point would be higher than in markets without (a perspective on) platform competition. However, in reality for NRAs it is – given their limitations in terms of perfect information - impossible to determine exactly where this "sweet spot" exactly lies.

**Trade-off between service competition and facility based competition: an example**

Many publications compare the effectiveness of fixed market regulation of US to Europe, and find that the US has been more successful. A good example of such publications is YOO, 2012. Yoo suggests that the US regulatory approach has been more successful than the European approach: "Data analysis indicates that, as of the end of 2012, the U.S. approach promoted broadband investment, while the European approach had the opposite effect [...]." However, it should be argued that such a conclusion is actually based on comparing apples to oranges. Many of the European member states did not have the "comfortable" starting position the US had, with its two near national cable and copper networks. A more satisfactory comparison is to compare the US to European countries that did have similar starting positions. The Dutch and Belgium markets have been in terms of starting position similar to the US market. Both the US, the

Netherlands and Belgium started out with both a national copper network and cable infrastructures with almost national coverage. If the Belgium and Dutch markets are compared to the US, it is clear that both sides of the Atlantic were relatively successful in terms of infrastructure investments (compared to other European countries). The quality of the networks in terms of bandwidth is relatively high. It is difficult to find reliable figures to compare investments in fixed broadband networks between US and Europe, but based on NGA coverage data, there is no reason to assume that investment levels in Belgium and the Netherlands have been significantly lower or more in general that the American consumers are better off in terms of network speed and quality. Although this is more of an anecdotal than a scientifically sound comparison, it can help to illustrate what might be the real impact of the different regulatory choices between the US and Europe. Whereas the starting positions (two platforms) were similar, a pure focus on platform competition in the US (no unbundling) could have led to the significantly higher price levels. So, while investment levels might not have been affected by the two different regulatory policies, in terms of welfare we seem to have observed a shift from the consumer surplus to the producer surplus in the US. Possibly, but this is of speculative nature, this also led to a lower penetration of Internet in the US, which could in turn be associated with a deadweight loss. According to the Worldbank in Belgium there is a penetration level of fixed broadband subscriptions (2013) of 34.4%, in the Netherlands of 40.1% while in the US this is only 29.2%. This is surprisingly low for an advanced country with a very high BNP per capita. We should of course be cautious not to draw too strong conclusions – as the above is only a superficial analysis. However, the highly simplified general statements implying that "the US is doing better than Europe, and this is because the US has withdrawn access regulation" are unscientific and not helpful in finding the best policy for the individual member states.

## ■ Application of the model

If we apply our simple conceptual model we presented above to the European market categories as identified previously, this allows us to draw a number of preliminary conclusions about the regulatory approach that would be most appropriate.

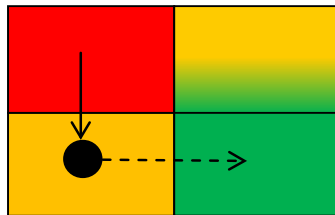
### Category 1: no platform competition

#### *No platform competition and a large legacy footprint: Italy, Greece*

In countries without significant platform competition lighter access remedies will lead to higher profits for incumbents, but are unlikely to lead to

more NGA roll-out as a strong replacement effect and lack of platform competition keep operators from investing, in particular in more advanced access technologies such as FttH. State intervention might be necessary to avoid a very large negative welfare impact. Without state intervention it's likely that the highest achievable situation would be "hyper competition". In order to move to a situation with a higher dynamic efficiency public investment would need to be considered. In particular in the case where there is substantial public investment, it would seem legitimate that the access regime ensures relatively low access prices to make sure consumers benefit from lower prices. This would mean that the market would move from "hyper competition" to "consumer paradise", see the dotted line.

**Figure 4 – No platform competition and a large legacy footprint**



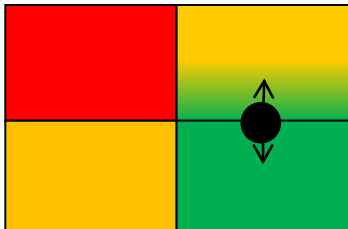
By more effective access regulation the regulator can change the situation from "incumbent paradise" to "hyper competition". However the challenge remains to subsequently move from "hyper competition" to "consumer paradise" (dotted line). Public investment could be an option for this.

***No platform competition and a limited legacy footprint:  
Eastern Europe (e.g. Lithuania, Slovakia)***

As a result of a lack of an extensive pre-existing fixed network infrastructure, FttH investments in Eastern-European member states have not been held back by a replacement effect.

As a result a number of Eastern-European countries such as Lithuania and Slovakia have an impressive FttH-footprint. Lighter access remedies might lead to some acceleration of roll-out, as the post-investment rent will be higher. If this holds, it could be optimal for a regulator to work towards a situation that is somewhere in between "consumer paradise" and "second best".

**Figure 5 - No platform competition and a limited legacy footprint**

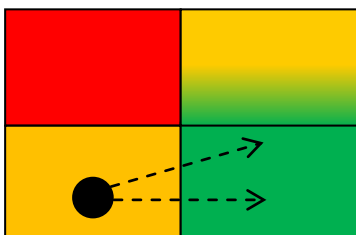


As investment in this type of market is much less hindered by replacement effects, incumbents would have incentives to invest. Too strict access regulation could both negatively impact coverage and roll-out pace, as it will reduce the post-investment rents. NRA's should therefore be very cautious in setting access prices.

**Category 2: limited platform competition (France, UK, Germany)**

Incumbents in this category of countries typically invest in FttC, which has generally been adopted slowly. There is usually limited, but slowly increasing platform competition from regional cable operators, which is likely to increase pressure to accelerate investments in FttC. Changes in access regulation can be expected to have limited impact on roll-out pace in areas without platform competition.

**Figure 6 - Limited platform competition**



In areas where there is platform competition, access price levels should ensure that post-investment rents are sufficiently high to promote investment. This can help to break-out from "hyper-competition" to "consumer paradise" In areas without platform competition, where the replacement effect hinders investment, relatively low access prices will not necessarily be detrimental to investment. There, public investment might be needed to break-out.

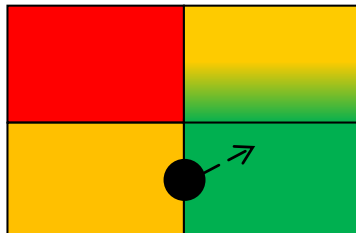
It's likely that in certain regions (with a footprint of both the former incumbent and cable) the situation will become similar to countries like Belgium and Netherlands (category 3), whilst in other regions the situation might be more similar to countries like Italy and Greece (category 1A). This might require a similar approach as described earlier. An interesting case is Spain, where a combination of strong regional competition from cable and

the wide availability of duct access led to a situation with strong incentives to roll out FttH, also to areas where there had been no cable footprint so far (as a result of which platform competition has been extended to a national level). As a result Spain has effectively escaped from this category and joined the ranks of the countries with strong platform competition.

### Category 3: Strong platform competition (Portugal, Belgium, Netherlands)

Under this category, incumbents have been challenged by cable operators to invest in NGA to keep up. Too strict access regulation could cause a limited slowdown of NGA roll-out. That implies it should be ensured that the regulator steers away from a situation that is too low in the "consumer paradise" quadrant. However, also a lack of effective access regulation could have an adverse impact. Besides constraining prices to a more optimal level, access regulation could promote competition on speeds (see e.g. SMITH, 2013; NARDOTTO, 2015) and could decrease the risk that the two platform operators would reach an equilibrium (less investment if they will no longer challenge each other on speeds). The assessment of these risks should be performed on a case by case basis.

Figure 7 – Strong platform competition



In order to increase the investment level in this type of markets, it needs to be ensured that the post-investment rates are sufficient. In these markets regulators should be less concerned with ensuring low prices. However access regulation can still increase welfare as it might constrain prices to a more optimal level, encourage competition on speed and more generally promote competition at the service level.

In countries with a strong cable and copper platform over time there might be decreased incentives to invest in FttH. The latter is observed in Belgium, where the incumbent was a frontrunner in FttC, but has not been challenged to roll-out FttH. In the Netherlands the incumbent recently announced to limit its investment in FttH in favour of upgrading its legacy copper network. Portugal is an example of a country that has both a very

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wide availability of duct and pole access and a near national cable footprint. As a result Portugal has already a near national FttH network.

## ■ Additional remarks on regulatory policy

In the previous paragraphs we have explored some potential policy options that could be considered, based on the classification of the national situation. As pointed out, in countries that increasingly lag behind in terms of NGA investment, public investment should be considered to address market failure. It is important that this is only considered as a measure of last resort, after it has been ruled out that incumbents or alternative market players cannot be furthered to invest in other ways and that this lack of investment accounts for significant welfare loss. In the case of public investment, it should be avoided that some market players benefit disproportionately and that the position of alternative operators is marginalised. It seems evident that such an occasion can be used by government to require certain guarantees with regard to the "openness" of the network, in terms of network architecture, access prices but also structural or functional separation. An interesting potential solution for this is co-investment arrangements between various market players and government that leads to a co-owned "netco". An interesting aspect of such co-investment arrangements is that access seekers, that usually do not have the scale to individually roll-out access networks, can participate in the investments. Such conditions should warrant that the public investments will increase consumer welfare rather than just benefit particular market players. It is outside the scope of this paper when it is exactly justified to consider public funds, and which conditions would be appropriate.

In countries at the other end of the spectrum, i.e. countries that have experienced a significant level of NGA investment already, the challenge is to ensure that NGA investment is continued in order to achieve an optimal investment level, and that simultaneously it is made sure that consumer prices stay at acceptable levels. The inevitable question is whether there are situations where two competing networks would be enough. In other words, would it be conceivable that two NGA networks would be sufficient to deliver acceptable outcomes in terms of investment levels and consumer price? Clearly, based on theory, and under certain conditions, a duopoly based on Bertrand competition can lead to very competitive outcomes. The problem is that there is very little empirical evidence to fully support either the

conclusion that two infrastructures lead to optimal welfare outcomes, or that the opposite is the case. Of course, it is impossible to answer this question in the context of this paper. We would assume that this question always needs to be answered on a case by case basis. In addition, it should also be realised that there could be a very high margin of uncertainty to answering the question as there is little empirical basis, and theoretical arguments might not be as conclusive, the risks of false positives and false negatives is relatively high. The associated costs of "getting it wrong" might be considerable. A sudden deregulation could, for example, lead to a shake-out of alternative operators, and diminish competitive constraints that have been (painfully) developed over a long period. Once it becomes clear that such deregulation was based on a "false negative", it can be too late to recover alternative operators. As a result, the costs of a false negative could well be significantly higher than the costs of a false positive – again this should be assessed at a case by case situation. A more robust and prudent approach might therefore be to acknowledge that at this stage it is usually impossible for regulators to draw a final conclusion. Rather than applying very strict regulation or no regulation at all, the regulator – after having made sufficiently likely that there is a realistic chance of consumer harm in absence of regulation - could start to gradually soften regulation and monitor how the market develops.

## ■ Conclusion

We have identified that there is not a single European trend towards more symmetry. Rather, markets with platform competition tend to become more symmetrical, whereas markets without platform competition stay asymmetrical in the absence of regulation.

This paper does not address questions with regard to detailed requirements to access regulation, and whether in a symmetric market just one or multiple networks should be regulated. Access regulation is approached from a purely economic perspective, leaving aside the legal justification of access regulation.

Based on theoretical and empirical arguments we have made likely that regulatory policy should be differentiated based on susceptibility of platform competition in a given country. This susceptibility is largely determined by pre-existing infrastructure, such as the existence of a cable footprint or



extensively available ducts. Given the dichotomy between countries with a tendency towards more symmetry and countries characterised by asymmetrical markets, a one-size-fits-all approach is increasingly questionable. Rather, the starting point of NRA's is the country-specific susceptibility to platform competition, and on that basis it is to decide what tailored regulatory approach can help to optimally benefit from the pre-existing infrastructure. In other words, NRA's should not try to create the waves themselves, but they should rather focus on how they can skilfully ride these waves. If there are no waves in a certain situation, even the smartest regulatory policy will not deliver.

The discussion on effective access regulation has been obscured by studies that present correlations between access regulation and less investment in NGA networks as cause-effect relations. We have argued that this cause-effect relation is likely to be more complex, but there is need for solid empirical research to be able to draw stronger conclusions.

We have proposed that, from a social welfare perspective, regulators should prioritize incentives to invest in NGA rather than safeguarding lower access prices. The welfare losses of underinvestment are likely to be much higher than welfare losses as a result of higher consumer prices. However, that does certainly not imply that higher prices are necessary or desirable per se. Higher prices for NGA are only likely to work in situations where the replacement effect is limited enough to be neutralized by the increased post-investment rents. In case of a highly symmetrical market with two competing platforms, it could be that access regulation will have a positive impact on investments through increased competition on broadband speeds.

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