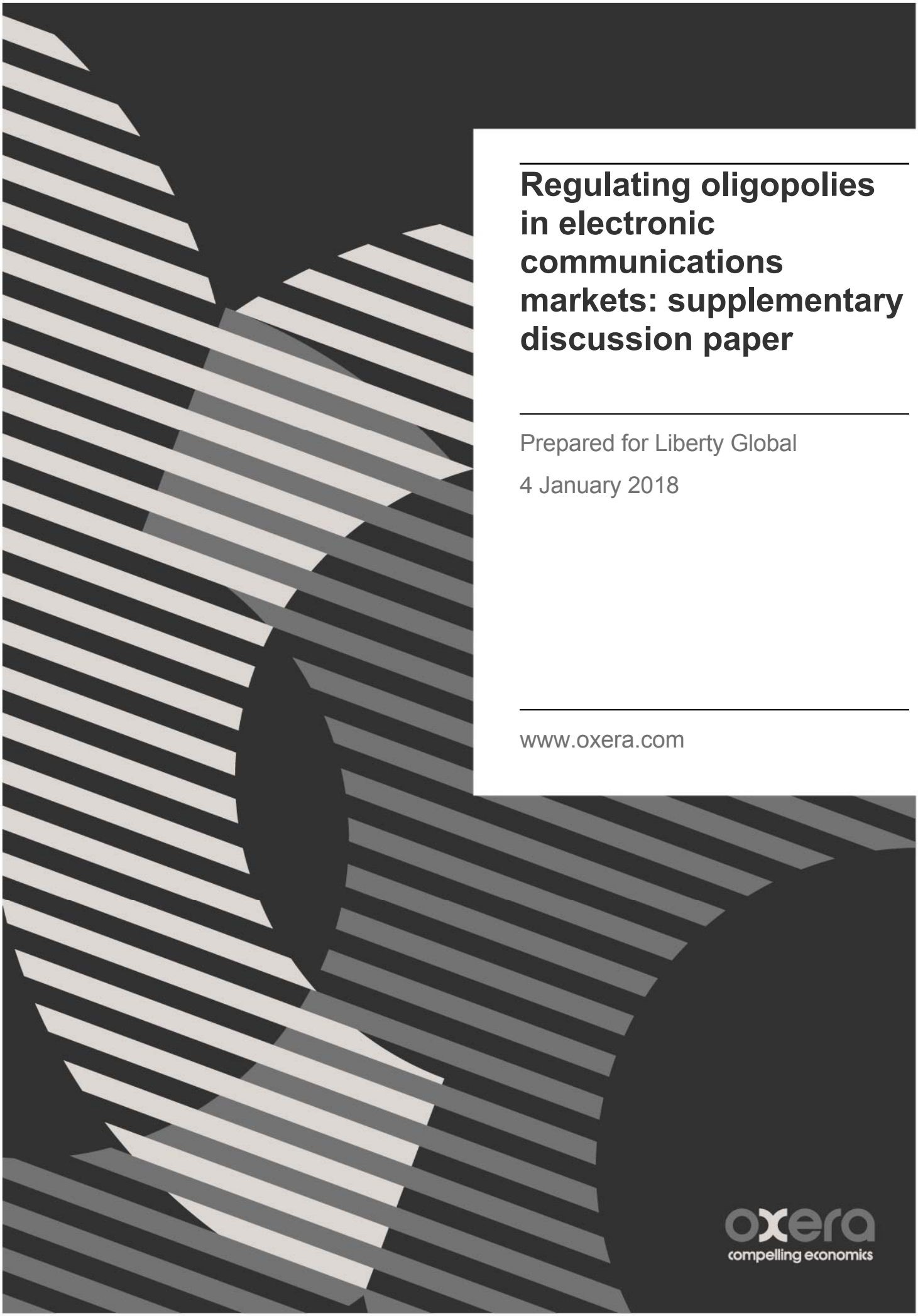

Regulating oligopolies in electronic communications markets: supplementary discussion paper

Prepared for Liberty Global

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Contents

Executive summary

Oxera's report entitled 'Regulating oligopolies in electronic communications markets' (the 'First Oxera Report', published in September 2017)[1] concluded the following.

- Regulators should not be concerned by the rise of oligopolistic market structures, since these structures are primarily being driven by desirable infrastructure-based competition.
- Expanding the regulatory toolkit to include unilateral market power (UMP), or expanding symmetric access obligations, will increase the risk of over-regulation, introduce uncertainty, and diminish investment incentives.
- The criteria for establishing joint SMP are sufficiently understood in case law and economic theory. An 'enforcement gap', if any, is small and does not need to be addressed by additional ex ante regulation such as UMP or expanded symmetrical access.
- Evolving consumer demand (for higher bandwidth and greater service bundles), increasing infrastructure competition (from 5G networks, increasing cable and alternative FTTx network coverage—based on the availability of passive infrastructure of utility providers and new techniques such as micro trenching), and disruptive competition from online platforms and over the top (OTT) providers mean there are competitive constraints on infrastructure operators independent of competition from wholesale access seekers.
- The time seems right for regulators to step back and rely on competition law to address any oligopoly concerns (other than tacit collusion), as originally envisaged by the 1999 and 2002 EU regulatory frameworks.

Since publishing the First Oxera Report, there have been a number of policy developments. These include the European Parliament and Council's presentations of their respective amendments to the European Electronic Communications Code (EECC) proposals, and the European Commission's publication of the responses it received to the public consultation on the review of the SMP Guidelines, including BEREC's response. These developments do not change the conclusions of the First Oxera Report. However, they raise a number of specific issues that continue to be debated by policymakers. In this context, Oxera is issuing this supplementary paper, which explains the following.

1. It is not enough in SMP assessments to show the possibility of a higher static price and conclude from this that there is a market failure that might indicate joint SMP. Given that price is just one of many dimensions of competition and consumer outcomes, intervening in markets based on concerns about high prices could have a negative impact on dynamic efficiency, and could be thought of as a transfer of surplus from 'tomorrow's' consumers to 'today's' consumers.
2. Proposals suggesting that refusal to supply access could be a leading indicator of tacit collusion, or might be enough to show consumer harm at the retail level, are incorrect and would result in an undue lowering of the threshold for intervention. Such proposals ignore how operators in an

[1] Oxera (2017), 'Regulating oligopolies in electronic communications markets', discussion paper prepared for Liberty Global, September, https://www.oxera.com/Latest-Thinking/Publications-Reports/Reports/2017/Regulating-oligopolies-in-electronic-communication.aspx.

oligopolistic market structure have strong incentives to offer commercial access in the presence of a competing infrastructure operator, as well as how the feasibility of coordinating wholesale access denial is low because it requires simultaneous coordination at both the wholesale and retail levels. These issues would need to be carefully considered in any market analysis.

3. The requirement for ex ante analysis is not in itself a reason to put more emphasis on structural elements, as an analysis focused on structural features will inevitably be incomplete. Structural market features on their own cannot provide strong evidence on whether competition between oligopolists will be effective. For example, markets with just two operators competing with differentiated but substitutable products, and different cost structures, and facing significant competitive constraints from external forces, such as online platforms and OTT services, can produce significantly more competitive outcomes than markets with many operators but where products, cost structures and technologies are more homogeneous. It is therefore also essential to take into account behavioural factors when determining joint SMP.

4. The challenges with undertaking ex ante SMP assessments that are forward-looking and control for the effects of pre-existing regulation on the market situation are not unique to the SMP framework. Similar forward-looking assessments are undertaken as part of the merger control regime, which looks at 'strengthening or creating joint dominance' or at 'significant impediments to effective competition'. Such an analysis is also required in order to correctly identify the particular counterfactuals and the theories of harm that need to be remedied using regulatory tools.

5. Following the existing SMP framework, any potential remedies must be adapted to reflect the nature of competition in the market in question. Theories of harm that might concern a regulator in an oligopolistic market are likely to be different from past concerns in the same market when it was characterised by single-firm SMP. Any remedies should be proportionate to the particular theories of harm identified and ensure that the incentives of infrastructure operators to compete and produce positive consumer outcomes are not reduced.

The discussion in this supplementary paper and the First Oxera Report shows that increasing levels of infrastructure competition are producing good outcomes for consumers, measured in terms of both price and non-price factors, including broadband speeds, the introduction of innovative services and investment, and the provision of commercial wholesale access. Furthermore, to the extent that uncompetitive outcomes are observed, coordinated outcomes in the electronic communications sector tend to be much less stable, and thus less likely to be observed, than uncompetitive outcomes based on unilateral conduct.

For these reasons, the existing high standards for intervention should be maintained and it is appropriate that the burden of proof to intervene in an alleged case of joint dominance is higher than that for single dominance. Lowering the burden of proof of the existing tests, or introducing more subjectivity in national regulators' decisions, will open the door to inconsistencies in regulatory approaches, and have a chilling effect on investment.

The importance of private investment and innovation by operators is underlined by the Commission's observation that reaching Europe's connectivity objectives is likely to require €500bn of investment, most of it from the private sector—and

under current investment trends there is an estimated €155bn shortfall.[2] A stable and predictable regulatory environment is essential in providing investor confidence, and for this private investment to continue.

[2] European Commission (2016), 'State of the Union 2016: Commission paves the way for more and better internet connectivity for all citizens and businesses', press release, 14 September, http://europa.eu/rapid/press-release_IP-16-3008_en.htm, accessed 20 December 2017.

1 Introduction and scope of this paper

In September 2017 Oxera published a report assessing whether the existing regulatory framework for electronic communications services continued to be fit for purpose in dealing with oligopolies, or whether new regulatory tools were required.

There have been a number of developments since the publication of the First Oxera Report. Most notably, the European Parliament and Council have presented their respective amendments to the EECC proposals, and the European Commission has made public the responses it received to the public consultation on the review of the SMP Guidelines, including BEREC's response.

In this supplementary paper, we undertake a critical review of these policy developments, building on the First Oxera Report.

1.1 Summary of the key points raised by the European Parliament, the European Council and BEREC

We first summarise the key points that emerge from these developments.

Starting with the **European Parliament**'s amendments to the EECC, we note that the proposed amendments to Article 61 appear to clarify joint dominance in a way that is aligned with some (but not all) of the *Airtours/First Choice* criteria. Other amendments seem to suggest that refusal to supply wholesale access, in conjunction with other factors, may be sufficient to demonstrate joint dominance. As stated in the Parliament's amendment to Recital 147 of the Code:

> In the specific circumstances of ex ante regulation of electronic communications markets, where barriers to entry for new entrants are typically high, the refusal by network owners to provide wholesale access on reasonable terms which benefit competitive dynamics sustainably, observed or foreseen in the absence of ex ante regulation, in conjunction with a shared interest in sustaining significant rents on downstream or contiguous retail markets out of proportion to investments made and risks incurred, may be in itself an indicator of a common policy adopted by members of an uncompetitive oligopoly.

Taken together, the Parliament's amendments to Article 61, and recital 147, raise the risk that regulators' analysis of joint dominance could become a checklist or box-ticking exercise, rather than an integrated and holistic economic analysis of market dynamics, as is required by well-established case law and economic thinking on the subject.

The **European Council**, on the other hand, has made no changes to Article 61, but it makes clear in its amendments that it considers the SMP framework to be insufficient to ensure effective competition in all cases.[3] As a result, it proposes to strengthen symmetric access regulation of all providers of electronic communications, by allowing member states to extend such obligations beyond the first concentration point, including active or virtual access to network components. Under the Council's proposals, this could be justified in the absence of SMP where symmetric access to the first concentration point does not sufficiently address economic or physical barriers to replication.[4]

[3] See European Council, Council of the European Union (2017), 'New EU telecoms rules – Council ready to launch talks with Parliament', press release 574/17, 11 October: 'The Council retains the core regulatory approach based on "significant market power" (SMP), which has proved its value over the years in opening up markets to new entrants. However, as market players are becoming increasingly complex, SMP regulation alone is not enough to ensure competition in all cases.'
[4] See proposed European Council amendments to Recitals 139–141 and 143, as well as amendments to Article 59(2) of the EECC.

Furthermore, **BEREC**'s response to the Commission's SMP Guidelines review states that, in its view, there are two key reasons why there are few cases of joint dominance:

1. the standard of proof is too high, especially when compared with single SMP;
2. the SMP framework does not address the risk of 'tight oligopolies'.

In order to address its first concern, BEREC seeks greater clarity on how to demonstrate joint dominance, by potentially lowering the standard of proof required.

For example, BEREC explicitly refers to the Spanish case ES/2005/0330[5] where, in addition to refusal to supply wholesale access, the Commission asked national regulatory authorities (NRAs) to prove that there were excessive rents at the retail level to protect. In BEREC's view, the retail analysis in these situations should be limited to an assessment of potential consumer harm.[6]

In addition, BEREC considers that greater clarity is needed on how to analyse joint dominance in situations where the market is currently regulated, since BEREC claims that regulatory obligations may be playing a key role in preventing joint dominance from arising.

In order to address its second concern, BEREC considers that the concept of UMP needs to be included in the SMP Guidelines. In BEREC's opinion,[7] UMP could be included in one of two ways:

- as an extension of SMP, where two or more firms are each deemed to 'enjoy a position of equivalent to significant market power when they might significantly impede effective competition';
- as a standalone concept in addition to SMP, where 'in the absence of significant market power, [a firm] enjoys a position of economic strength by virtue of the weakness of competitive constraints in an oligopolistic market, enabling [the firm] to act in a manner which is detrimental to consumer welfare'.

1.2 Summary of issues covered in the First Oxera Report and in this paper

The key findings of the First Oxera Report are summarised below.

1. Regulators should not be concerned by the rise of oligopolistic market structures, since these structures are primarily being driven by desirable infrastructure-based competition.
2. Expanding the regulatory toolkit to include UMP, or expanding symmetric access obligations, will increase the risk of over-regulation, introduce uncertainty, and diminish investment incentives.
3. The criteria for establishing joint SMP are sufficiently understood in case law and economic theory. An 'enforcement gap', if any, is small and does not

[5] Comisión del Mercado de las Telecomunicaciones (CMT) review of the wholesale market for mobile access and call origination.
[6] See BEREC's response to Q 3.2.1.18, in BEREC (2017), 'BEREC response to the public consultation from the EC on the update of the SMP Guidelines', BoR (17) 115.
[7] See BEREC (2017), 'BEREC views on non-competitive oligopolies in the Electronic Communications Code', BoR (17) 84.

need to be addressed by additional ex ante regulation such as UMP or expanded symmetrical access.

4. Evolving consumer demand (for higher bandwidth and greater service bundles), increasing infrastructure competition (from 5G networks, increasing cable and alternative FTTx network coverage—based on the availability of passive infrastructure of utility providers and new techniques such as micro trenching),[8] and disruptive competition from online platforms and OTT providers mean there are competitive constraints on infrastructure operators independent of competition from wholesale access seekers.

5. The time seems right for regulators to step back and rely on competition law to address any oligopoly concerns (other than tacit collusion), as originally envisaged by the 1999 and 2002 EU regulatory frameworks. (The principle—that ex ante regulation should be considered only if competition law enforcement is insufficient, on a prospective basis, to deal with the identified market failures—is well established in the three-criteria test that underpins the SMP framework.)

The recent policy developments do not alter the conclusions of the First Oxera Report.

In particular, the First Oxera Report provided extensive evidence and arguments to challenge the suggestion by the Council, as noted above, that the SMP framework is insufficient to guarantee effective competition in all circumstances. By making this statement, the Council is suggesting that an enforcement gap currently exists. The First Oxera Report explained that the relevant question for policymakers is not whether an enforcement gap exists, as this provides little guidance for good policymaking. Rather, the relevant policy question concerns the optimal size of such a gap, and whether the benefits of addressing it using ex ante regulation are outweighed by the costs of doing so—and hence whether additional ex ante regulation is the answer to an enforcement gap.

Furthermore, the First Oxera Report explained that the concept of UMP proposed by BEREC would be unworkable in practice, since it remained unspecified and open to interpretation. In particular, the proposal by BEREC to include UMP in addition to SMP in the framework would mean that regulators would be able to intervene in markets that are more competitive than ones in which SMP can be found, but not as effectively competitive as the regulator would like. The legal uncertainty caused by such a test would be significant, and likely to be unsurmountable. It is therefore no surprise that the UMP concept does not appear in any of the proposed amendments to the Code.

However, recent developments raise a number of specific issues that continue to be debated by policymakers. Hence, in addition to reiterating and expanding on the key findings of the First Oxera Report, this supplementary paper addresses the following.

- The suggestion by BEREC that the standard of proof for finding joint dominance is too high, as well as the related argument by both BEREC and the Council that the SMP framework is insufficient to guarantee effective competition.

[8] Micro trenching is a narrow-trenching technique that lowers the costs of fibre deployments by avoiding the expense of digging up roads. Micro trenches are usually only 10cm wide instead of the standard 40cm trenches used previously.

- The suggestion by the Parliament that refusal to supply wholesale access on terms that remain unspecified (in conjunction with high rents downstream at a level that also remains unspecified) could be evidence of joint dominance.

The remainder of this supplementary paper covers the following issues.

- Section 2 reviews the multidimensional characteristics of oligopolistic competition, and challenges the idea that it would be possible to conclude that a market failure exists by assessing just one dimension of competition, and in particular, by looking at short-term measures of prices and profits.
- Section 3 discusses the role of wholesale access in the competitive dynamics of telecoms markets, and challenges the suggestion that the absence of wholesale access can be a strong indicator of the existence of tacit collusion/joint dominance in the market. This section concludes by arguing that regulators should follow an integrated economic approach based on the well-established *Airtours/First Choice* and *Impala* case law when analysing whether a market may exhibit joint dominance in the absence of regulation, and that any approach resembling a checklist or box-ticking exercise would be inappropriate.
- Following this, section 4 explains why a high standard of intervention remains appropriate in the case of oligopolistic competition and should not be diluted. Furthermore, this section argues that any case for regulatory intervention in markets characterised by oligopolistic competition should be tailored and proportionate to the identified market failures.

2 Analysing market outcomes under oligopolistic competition

There seems to be consensus in the ongoing debate that a clear identification of retail market failure(s) should be the starting point for any ex ante regulatory market intervention.

However, this still leaves room for interpretation of what exactly constitutes a retail market failure. In particular, given the multidimensional nature of competition and market outcomes of electronic communications markets, there is a risk that regulators may place undue focus on a subset of factors at the expense of others.

In this section we caution against such simplistic analysis, and challenge the idea that it would be possible to conclude that a market failure exists by assessing just one dimension of competition—in particular, an easily measurable one such as short-run price levels or profits.

Section 2.1 summarises the key points made in the First Oxera Report regarding the critical role played by infrastructure competition in driving investment and delivering good outcomes for consumers.

Section 2.2 discusses the many dimensions of competition (price, speed, private investment and innovation) that should be considered when analysing whether oligopolistic infrastructure competition is effective (in a forward-looking analysis) and producing good market outcomes for consumers. We conclude that regulators should exercise caution before determining that the retail market is not effectively competitive based on an analysis of just a subset of these dimensions of competition.

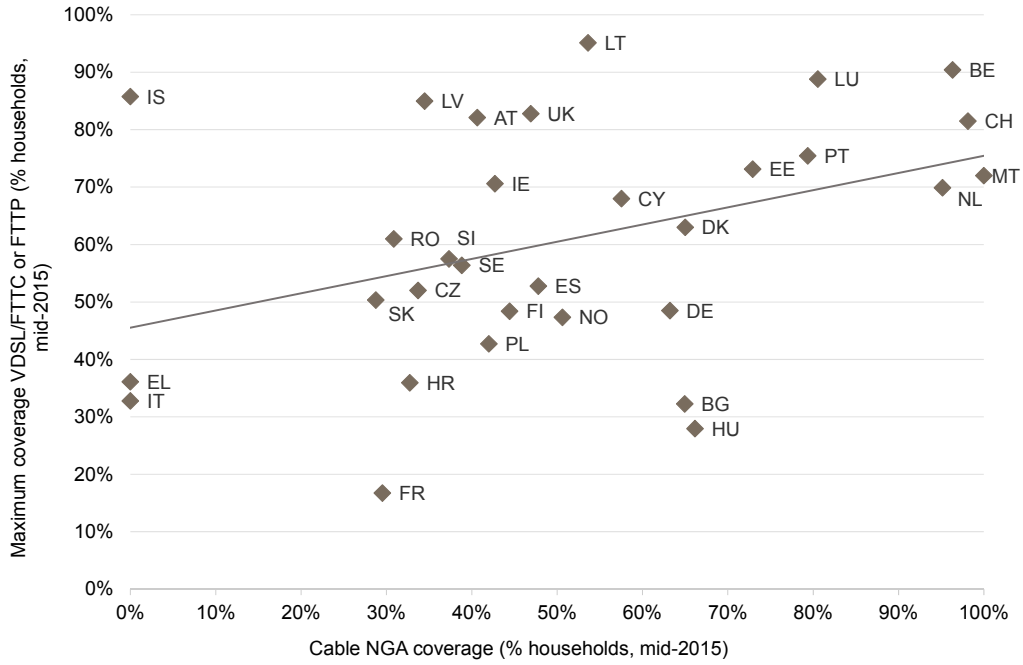
Finally, section 2.3 provides a forward-looking context for infrastructure competition, explaining how new technologies such as 5G, and the continued reduction in the cost of rolling out FTTx networks, are increasing the possibilities for sustainable infrastructure-based competition in many member states.

2.1 Infrastructure competition and investment in cable networks are delivering good market outcomes

The First Oxera Report reviewed a large body of empirical evidence that demonstrated that infrastructure competition among cable, copper and mobile networks was the main driver of investment in next generation access (NGA) networks and innovation. Competition from access seekers is unlikely to drive investment in access networks, and the ladder of investment concept has been only partially successful (see sections 2.1 and 2.2 of the First Oxera Report).

Figure 2.1 below, reproduced from the First Oxera Report, shows a clear positive correlation between cable NGA coverage and non-cable NGA coverage (as illustrated by the upward-sloping line of best fit).

Figure 2.1 ≥30Mbps coverage: cable vs copper fibre



Note: NGA defined as ≥30Mbps download speed. Cable NGA includes DOCSIS 3.0.

Source: European Commission (2016), 'Broadband Coverage in Europe 2015: Mapping progress towards the coverage objectives of the Digital Agenda', Final dataset, 30 September, https://ec.europa.eu/digital-single-market/en/news/broadband-coverage-europe-2015, accessed 19 July 2017.

Furthermore, an analysis by Wik in 2015 for Ofcom on the drivers of superfast broadband notes that:[9]

> One of the single most important factors in explaining NGA coverage is the pre-existence of cable, which can be upgraded to DOCSIS 3.0 at low cost. Figure 11 shows the important role that DOCSIS 3.0 has played in affecting overall NGA coverage. Comparing data on overall cable coverage with DOCSIS 3.0 also reveals a very high correlation highlighting the high degree of conversion to the newer technology.

The significantly larger benefits of infrastructure competition for consumers relative to competition based on wholesale access are corroborated by Ofcom in its recent wholesale local access market review, in which it notes that:[10]

> Without network competition, even vigorous competition between service providers will not prevent customers being disadvantaged by inefficient, poor quality or otherwise sub-optimal choices concerning the underlying network.

Ofcom further notes that:

> Historically, we have seen benefits from network competition. BT announced its rollout of superfast broadband shortly after Virgin Media's upgrade to DOCSIS 3.0. Similarly BT's recent announcement on G.fast investment plans was made in the context of Virgin Media offering a maximum service speed of 200 Mbit/s compared to a maximum of 80 Mbit/s available from Openreach using its FTTC network.

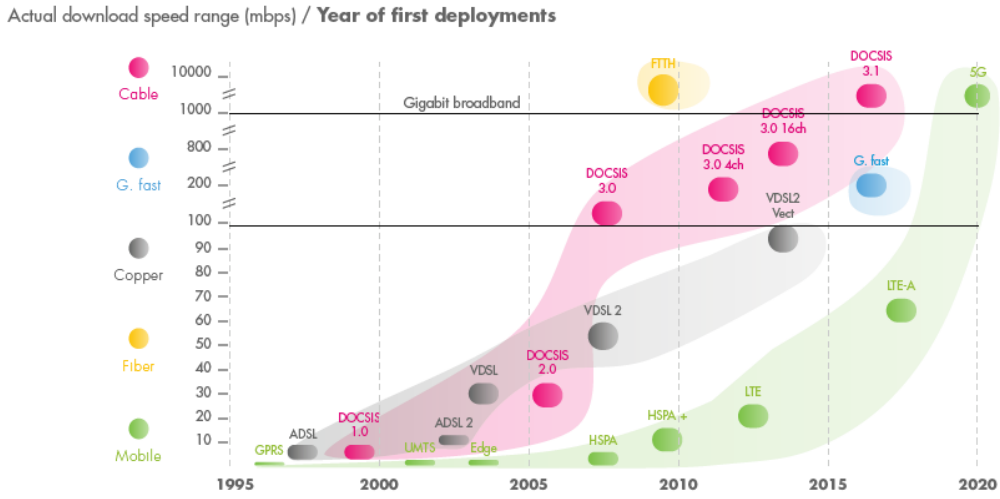
[9] Wik (2015), 'Competition & investment: An analysis of the drivers of superfast broadband', July, p. 18.
[10] Ofcom (2017), 'Wholesale Local Access Market Review: Promoting network competition in superfast and ultrafast broadband', 1 December, p. 3.

The advent of mobile broadband with 4G means that mobile networks are also increasingly competing with fixed networks. This evolution towards greater speeds has been demonstrated by improvements to existing 4G networks. For example, EE has started deploying new technology (4x4 MIMO and 256QAM) to existing 4G sites in the UK—a move which will increase peak speeds above 400Mbps.[11]

Given the roll-out of 5G networks, we would expect this competition from mobile networks and the convergence of fixed and mobile networks to intensify. The speeds achieved by 5G networks are expected to rival those of fixed networks. For example, a collaboration between Orange and Ericsson in France recently achieved peak speeds of greater than 10Gbps.[12]

Figure 2.2 illustrates how this competitive 'leapfrogging' and competitive upgrades of cable, mobile and copper networks have led to significant increases in speed over the past 25 years and are expected to continue to do so.

Figure 2.2 Actual and predicted download speed by technology



Source: Cable Europe, 'Reaping the benefits of continuous investment', factsheet, http://www.cable-europe.eu/wp-content/uploads/2016/09/cable_europe_factsheet_V2.pdf, accessed 23 November 2017.

The First Oxera Report also shows how the speed advantage of one technology stimulates others to upgrade their networks, using the example of upgrades of cable and copper networks in the Netherlands and Belgium. This leapfrogging in technology is also accompanied by rapid product and service innovation by competing networks, illustrated again for these two countries (Appendix A1 in this paper reproduces the figures from the First Oxera Report that show the technology leapfrogging, as well as product and service innovation in Belgium and the Netherlands).

As discussed in section 2.3 and section 2.1.2 of the First Oxera Report, infrastructure competition also delivers good outcomes to consumers such as

[11] EE (2017), 'The EE network just got even faster – Sony's Xperia XZ Premium and EE combine to reach more than 400Mbps real world download speeds', 6 June, http://newsroom.ee.co.uk/the-ee-network-just-got-even-faster---sonys-xperia-xz-premium-and-ee-combine-to-reach-more-than-400mbps-real-world-download-speeds/, accessed 19 July 2017.
[12] Ericsson (2017), 'Ericsson and Orange demonstrate speeds beyond 10Gbps in live 5G field trial', 25 January, https://www.ericsson.com/en/news/2017/1/ericsson-and-orange-demonstrate-speeds-beyond-10gbps-in-live-5g-field-trial, accessed 19 July 2017.

higher penetration of broadband services, speed and coverage, in addition to price competition leading to lower prices.

For example, an econometric study by Smith, Northall and Santamaría (2013) based on 2008–11 annual panel data from 27 EU member states suggests that increased market shares for local loop unbundling (LLU) entrants tend to result in lower prices and higher broadband speed, but increased bitstream or resale market share do not have this effect. In contrast, end-to-end infrastructure competition is found to result in a decrease in retail prices similar to LLU, but to have a much larger positive effect on broadband speeds (see Table 2.1).

Table 2.1 Effect on consumer outcomes from different forms of competition

Effect of a 10% increase in market share on:	Simple resale	Bitstream access	LLU access	Infrastructure competition
Retail prices	None	None	-1.9%	-1.6%
Average broadband speed	None	None	+12%	+20%

Note: The impact on retail prices of LLU and infrastructure competition is not statistically different at the 15% significance level.

Source: Smith, R., Northall, P. and Santamaría, J. (2013), 'The impact of intra-platform competition on broadband prices and speeds', *Journal of Information Policy*, **3**, pp. 601–18.

The roll-out of technological upgrades requires substantial investments.[13] Figure 2.3 demonstrates this high level of investment by Cable, Altnet (alternative networks) and Incumbent fixed network operators.

Figure 2.3 CAPEX/sales ratio of telecom operators in Europe

Source: Cable Europe, 'Reaping the benefits of continuous investment', factsheet, http://www.cable-europe.eu/wp-content/uploads/2016/09/cable_europe_factsheet_V2.pdf, accessed 23 November 2017.

These investments have produced substantial benefits. For example, Liberty Global has made significant investment in the reach and capability of its broadband cable network in the four years since the start of 2013.[14] In simple monetary terms, Liberty Global has invested €14.5bn[15] in total capital expenditure across all of its European operations since the start of 2013. This is

[13] Cable networks first served as TV distribution networks, and evolved into data transmission networks as consumer demand developed for a rapid data transmission medium in the 1990s. The development of the DOCSIS protocol allowed cable operators to deliver broadband services over their existing Hybrid Fibre Coaxial cable. Investment in R&D led to several iterations of the DOCSIS standard that allowed continued improvement of cable broadband performance. The newest generation of DOCSIS provide competitive broadband speeds with network capacity of up to 10 gigabits per second.
[14] Investment period from January 2013 to March 2017 (i.e. 4.25 years in total).
[15] The €14.5bn investment is total capital expenditure, including customer premises equipment, new build and upgrades, capacity, capital costs associated with maintaining and supporting the business, and products and enablers, of Liberty Global's consolidated European operations from the beginning of 2013 to 31 March 2017, adjusted for inflation.

investment in new and existing infrastructure, customer equipment and business support, resulting in the addition of millions of premises to the company's high-speed cable network (through new build and acquisition).

The investment in communications infrastructure requires supply chains, which have a multiplier effect through the wider economy. The total economic footprint of Liberty Global's investment therefore includes the activity of Liberty Global's suppliers, and of the suppliers to those suppliers, and so on up the value chain. The total economic value of this activity is estimated to be around €23.7bn. Liberty Global's cable broadband investments are also generating significant societal benefits deriving from improvements in speed, productivity and competition. In total, the estimated benefits of Liberty Global's investment in cable broadband are expected to be worth €7.1bn to customers and businesses in Europe, equating to a social return of 49%.[16] These estimates are based on a previous Oxera study available on www.oxera.com.[17]

Other private sector operators (alternative network operators) are also investing in FTTx and next generation fixed broadband networks. Examples include SIRO in Ireland, Enel Open Fiber in Italy, Invitel in Hungary, Portugal Telecom (MEO) and Vodafone in Portugal, RCS & RDS in Romania, and various municipal networks in Sweden (section 2.1.3 of the First Oxera Report provides details of these deployments).

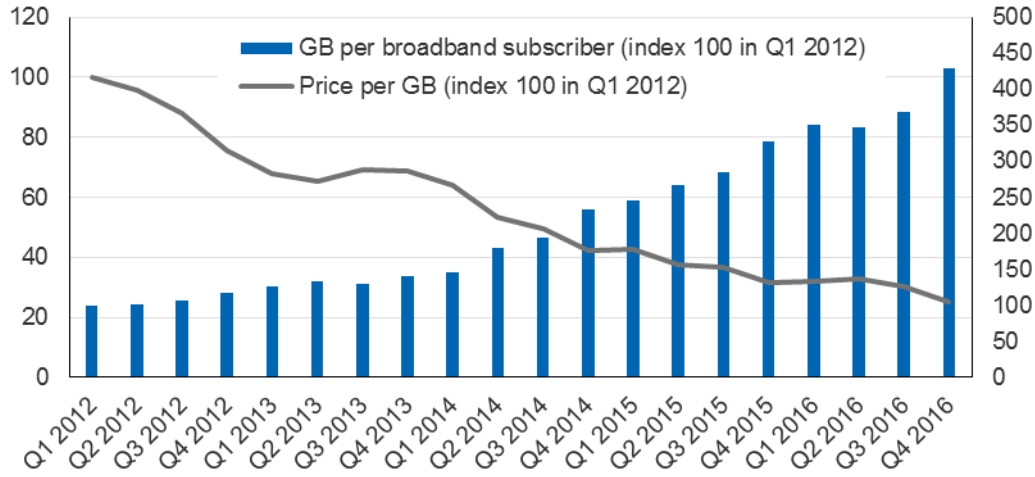
The importance of private investment and innovation by operators is also underlined by the Commission's observation that reaching Europe's connectivity objectives is likely to require €500bn of investment, most of it from the private sector, and that under current investment trends there is an estimated €155bn shortfall.[18] A stable and predictable regulatory environment is essential in providing investor confidence, and for this private investment to continue.

2.2 Price is just one of many dimensions of competition and consumer outcomes

Infrastructure operators compete using different technologies—for example, cable and copper-fibre network operators come from different core-product backgrounds and enjoy different comparative advantages. The bundling of a range of services offered by these types of operator (reflecting their competitive advantages in different core-product backgrounds) means that a wide range of differentiated retail offers are available in the market. This is reflected in variation in the design of bundles (e.g. due to different TV channel packs, set-top boxes, and other inclusive services, such as hotspot access and unlimited calls packs), with differences across both pricing dimensions and multiple quality dimensions. These multiple quality dimensions also evolve over time—for example, inclusive data allowances have generally been increasing over time and the price per Gigabyte usage per broadband subscriber has been falling over time, as illustrated for the case of Belgium in Figure 2.4 below.

[16] Returns on the investment generated for consumers and businesses, ignoring any profits or losses made by Liberty Global itself or its competitors.
[17] Oxera (2017), 'Liberty Global's investment in Europe: an economic impact assessment', prepared for Liberty Global, 30 May, https://www.oxera.com/Latest-Thinking/Publications/Reports/2017/Liberty-Global-s-investment-in-Europe-Oxera-s-(1).aspx.
[18] European Commission (2016), 'State of the Union 2016: Commission paves the way for more and better internet connectivity for all citizens and businesses', press release, 14 September, http://europa.eu/rapid/press-release_IP-16-3008_en.htm, accessed 19 July 2017.

Figure 2.4 Fixed broadband price per GB and GB usage per broadband subscriber in Belgium, 2012–16



Source: Telenet.

The existence of these many and evolving service permutations across member states and over time means that comparing prices for telecom services is not a trivial exercise.

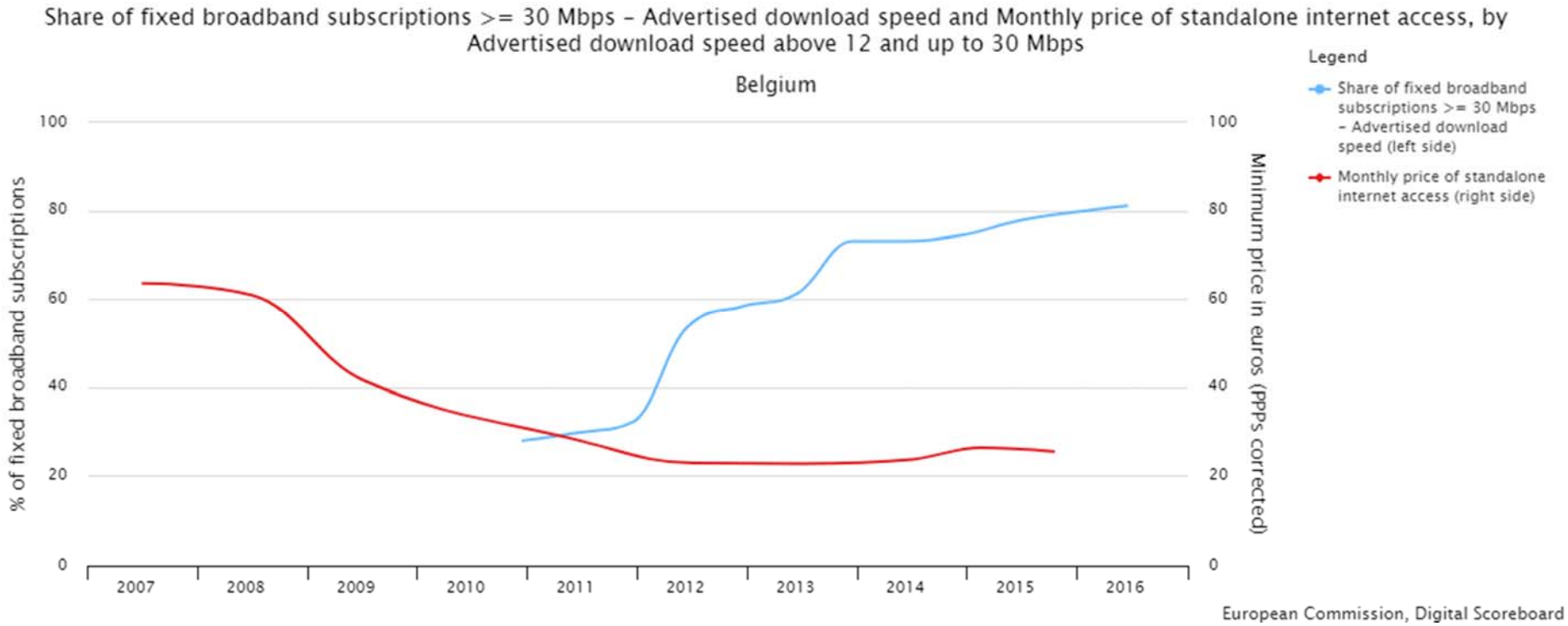
For example, the level of competition, network topology, investment levels, availability of innovative services, quality of service, etc. vary across member states. Prices charged by different operators vary with these factors as well as with macroeconomic factors such as differences in income levels. This means that comparing prices across member states is not a trivial exercise, and may not be an appropriate basis on which to decide whether prices in a particular member state are 'high'.

Given the multidimensional and dynamic characteristics of competition, regulatory intervention that is justified on the finding of a market failure based on just a subset of indicators is likely to result in worse consumer outcomes in the long run. In particular, focusing primarily on short-run price levels will ignore dynamic aspects of competition and consumer benefits, such as investments in network upgrades and new technologies, product and service innovation, and the quality of service (QoS) and of experience (QoE) enjoyed by consumers.

For example, even where prices appear to be high (for example, based on comparisons across member states) or have been trending upwards after having been at low levels for a long period of time, this may be justified by investment levels and/or improvements in quality of services (such as larger data allowances or faster speeds) in a given market.

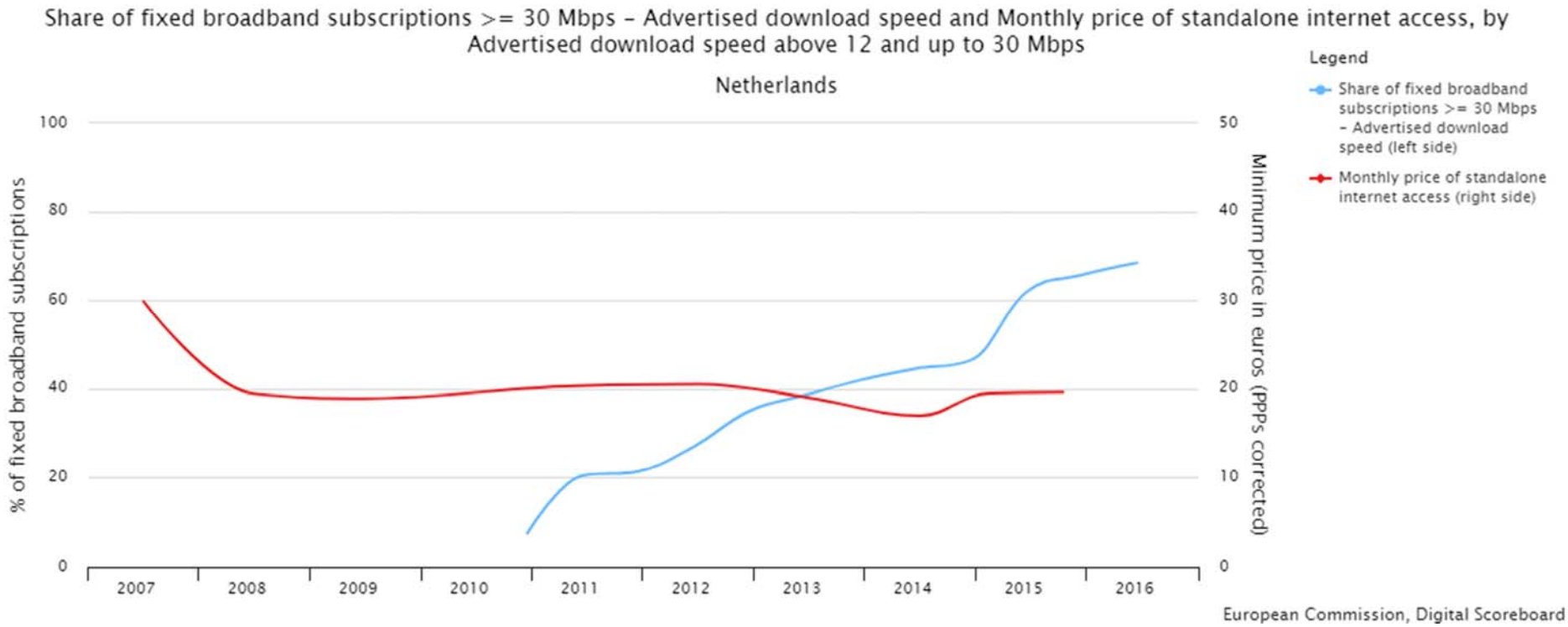
This is illustrated for Belgium and the Netherlands in Figure 2.5 and Figure 2.6 below. For these countries we observe a substantial increase in the take-up of high-speed broadband connections (reflecting increased network investment and availability), with generally falling prices with small price increases periodically.

Figure 2.5 Evolution of prices for standalone Internet access and take-up of high-speed broadband in Belgium



Source: http://digital-agenda-data.eu/charts/compare-the-evolution-of-two-indicators/embedded#chart={"x-indicator-group":"bbquality","x-indicator":"bb_speed30","x-breakdown":"TOTAL_FBB","x-unit-measure":"pc_lines","y-indicator-group":"bbquality","y-indicator":"Price_Internet_only","y-breakdown":"offer_12_30_Mbps","y-unit-measure":"minimum_euro_PPP","ref-area":"BE"}, accessed 20 December 2017.

Figure 2.6 Evolution of prices for standalone Internet access and take-up of high-speed broadband in the Netherlands



Source: http://digital-agenda-data.eu/charts/compare-the-evolution-of-two-indicators/embedded#chart={"x-indicator-group":"bbquality","x-indicator":"bb_speed30","x-breakdown":"TOTAL_FBB","x-unit-measure":"pc_lines","y-indicator-group":"bbquality","y-indicator":"Price_Internet_only","y-breakdown":"offer_12_30_Mbps","y-unit-measure":"minimum_euro_PPP","ref-area":"NL"}, accessed 20 December 2107.

2.2.1 The trade-off between low prices and high levels of investment

Regulators should therefore carefully assess the trade-off between the objectives of low prices and high levels of investment, and in particular, whether the observed short-run level and recent evolution of prices are optimal given these other dimensions of competition.[19]

Furthermore, when looking at price levels in a market, regulators should exercise great care before reaching the conclusion that a particular level of price is 'too high' or 'excessive'.

A competitive market would yield cost-reflective prices and help to achieve allocative efficiency and maximise consumer welfare. In theory, therefore, prices that are 'too high' are those that are set materially in excess of efficient costs, resulting in profits that exceed the opportunity cost of capital. For this reason regulators often favour cost-reflective prices and work towards making competition more effective.

However, expecting and requiring firms to consistently set prices, year on year, that closely match their cost base, would significantly damage investment incentives. Indeed, there are many reasons why prices may deviate from costs over a given time period, without this being inconsistent with competitive market dynamics.

For example, investments are lumpy, whereas prices are (typically) more stable. As a result, a snapshot in time may show a large deviation between prices and costs (or profits and the cost of capital), without this being indicative of a competition problem.

In theory, measuring the (truncated) internal rate of return (IRR) of a product over a sufficiently large timeframe can resolve this timing issue.[20] This truncated IRR measure can then be compared against the firm's or project's cost of capital.

However, even where the IRR is found to be in excess of the cost of capital, extreme care is required before concluding that this provides evidence of a market failure requiring price regulation. Earning profits in excess of the cost of capital could very well be consistent with firms reaping the rewards of a successful but risky investment, or the result of significant efficiency gains. In other words, profits in excess of the cost of capital could be providing a fair return for investors after taking account of the cash flow risks incurred at the point at which they made the decision to invest in a project.[21]

[19] For instance, a recent study by Genakos, Valletti and Verboven shows that an increase in market concentration in the mobile industry generates an important trade-off. The authors find that while a merger typically increases price, investment per operator also go up. Genakos, C., Valletti, T. and Verboven, F. (2017), 'Evaluating Market Consolidation in Mobile Communications', CEP discussion paper No 1486, June, http://cep.lse.ac.uk/pubs/download/dp1486.pdf, accessed 22 November 2017.

[20] In doing so, it is important to ensure that asset values are appropriately estimated based on the modern equivalent asset (MEA) methodology. For further details, see Office of Fair Trading (2003), 'Economic Discussion Paper 6: Assessing profitability in competition policy analysis', a report prepared for the Office of Fair Trading by Oxera, July.

[21] This is akin to the concept of the 'fair bet', which Ofcom has used to regulate BT's investment in its FTTC network. As acknowledged by Ofcom, when a firm invests in a risky asset that has upside and downside risks, it is important that regulation does not act to curtail the possibility of earning returns in excess of the cost of capital in the 'good' scenarios, to compensate for the possibility of 'bad' scenarios occurring. What is important is not the actual level of returns observed, but the expected level of returns at project inception, taking account of 'good' and 'bad' scenarios.

For all these reasons, we would caution regulators against reaching strong conclusions on market failures based on a static analysis of profits or price–cost tests, or benchmarking across member states.

Intervening in markets based on such evidence could have a negative impact on dynamic efficiency, and could be thought of as a transfer of surplus from 'tomorrow's' consumers to 'today's' consumers.

We also note that cost-reflectiveness is not the only benchmark for assessing excessive prices under competition law (Articles 101 and 102 TFEU). Different standards such as willingness to pay (WTP) have been considered in other sectors with oligopolistic competition.

2.2.2 Alternatives to cost reflectiveness to assess excessive pricing in competition law

In particular, the cost-plus approach to assessing excessive pricing does not account for the demand-side factors that influence the total economic value or 'pie' available in the value chain. Instead, one can use WTP as the relevant benchmark and the proxy for economic value. This is because the economic value could be high due to customers' WTP for a specific feature, and this might not involve high costs. This is aligned with the approach adopted by the European Commission in *Port of Helsingborg*, and by the UK Court of Appeal in *Attheraces v British Horseracing Board*.[22]

In *Port of Helsingborg*, ferry operators had accused the port of setting excessive charges. The Commission rejected the complaint. It concluded that, although prices exceeded costs by a significant margin, the land used by the port for the ferry operations was highly valuable in itself, and ferry operators derived a high value from the port, which could be taken into account as part of the economic value of the services. Similarly, in *Attheraces*, which concerned the pricing of racing data, the Court of Appeal rejected the cost-plus approach and said that the price could take into account the value of the product to the purchaser of the data (in this case the broadcaster, Attheraces), as long as it was not so high that the downstream firm was prevented from competing effectively.

Under this approach, the key question is not so much about who takes the larger share of the total value available—i.e. the 'pie' (allocative efficiency)—but whether the total size of the pie is maintained. As long as the downstream competition is not distorted and remains effective, and consumers receive the end-service at the same price, *Attheraces* would indicate that the price is not unfair, even if it is high.

More recently, in *Unwired Planet*,[23] the court found that the royalty offer of Unwired Planet was above FRAND but did not amount to excessive pricing. This was because it was an offer as a part of the normal bargaining process and the offer was not so high as to hinder the bargaining process.

Following this case law, regulators should not be constrained to assessing excessive pricing in the telecoms sector only using cost-reflectiveness as the benchmark. It may be appropriate to use other benchmarks in some instances, for example for wholesale access charges, reflecting the growing competition in the electronic communications sector.

[22] *Scandlines Sverige AB v Port of Helsingborg* (Case COMP/A.36.568/D3), Decision of 23 July 2004, para. 209; *Attheraces v British Horseracing Board* [2007] EWCA Civ 38, para. 218.
[23] *Unwired Planet International v Huawei Technologies*, [2017] EWHC 711 (Pat), judgment of 5 April 2017. CJEU, Case C-177/16, *AKKA/LAA v Konkurences padome*, judgment of 14 September 2017.

The discussion above is consistent with the evidence presented in the First Oxera Report regarding the findings from economic theory and empirical evidence, which show that oligopolies come in many flavours (see section 3.1 of the First Oxera Report). This means that structural market features on their own cannot provide strong evidence on whether competition between oligopolists will be effective. For example, markets with just two operators competing with differentiated but substitutable products, with different cost structures, and facing significant competitive constraints from external forces, such as online platforms and OTT services, can produce significantly more competitive outcomes than markets with many operators but where products, cost structures and technologies are more homogeneous.[24]

Hence it would not be sufficient to look only at prices, investment levels or structural factors without also considering profitability. This is because when profits are low, firms do not have market power. And higher firm profitability under oligopolistic competition does not automatically imply market failure but could reflect the fact that higher margins are required to recoup fixed costs, or to reward successful investments in risky assets, as explained above.

In summary, it is not enough to show the possibility of a higher static price, and conclude from this that there is a market failure that might indicate joint dominance.

2.3 Increasing infrastructure competition means that the market structure is evolving (not static)

Any forward-looking market review should consider that there is likely to be increasing infrastructure competition from the development of 5G networks, the increasing coverage of cable networks and alternative FTTx networks, and the deployment of fibre networks utilising the passive infrastructure of utility providers (such as electricity and water companies). Section 2.1.3 of the First Oxera Report provides examples of many such deployments in Ireland, Italy, Hungary, Portugal, Romania and Sweden. These developments continue apace, and new announcements are made regularly. For example, in its recent wholesale local access market review, Ofcom states:[25]

> We note several developments since the publication of our March 2017 WLA Consultation that suggest increased appetite for ultrafast network deployment. CityFibre has announced its plan to roll out FTTP to 1 million premises in 12 cities over the next four years in partnership with Vodafone – with a possible extension to up to 5 million premises, and BT has consulted on co-investment plans to reach 10 million premises. Other developments include an announcement by Hyperoptic of its ambition to pass 2 million homes by 2022, and Gigaclear's continued expansion in mainly in rural areas. We also note the ongoing plans by BT, who have an ambition to pass 2 million homes with FTTP by 2020, and Virgin Media who plan to make ultrafast speeds available to an additional 4 million premises by 2020.

Such infrastructure competition is not dependent on wholesale access regulation (other than duct and pole access in some cases), and is driven by market factors

[24] Competition between two operators that have different cost structures might nevertheless result in the two operators charging similar prices, in particular if competition is intense. For example, in perfect Bertrand competition with differentiated costs, strong competition might bring the market price down to the costs of the higher-cost operator. This can happen where the higher-cost operator prefers a lower margin over the substantial volume losses it would incur if it charged a higher price than its lower-cost competitor. Similarly, strong competition from external forces might bring the price down to the costs associated with these external constraints.

[25] Ofcom (2017), 'Wholesale Local Access Market Review: Promoting network competition in superfast and ultrafast broadband', 1 December, para. 3.2.

which include the continued growth in demand for bandwidth and quality of service and the convergence of networks and online platforms/content providers.

These rapidly changing market and technological developments mean that, from a forward-looking perspective, structural market conditions are also expected to evolve, leading to more infrastructure competition irrespective of wholesale access.

The roll-out of 5G networks is particularly relevant. We expect competition from mobile networks and the convergence of fixed and mobile networks to intensify over the next regulatory period, broadly in line with the time it will take for the Code to be transposed into national laws and be applied by national regulators when conducting relevant market reviews.

For example, commercial 5G services are expected as early as 2019 in the Netherlands;[26] and Proximus and Telenet in Belgium plan to roll out 4.5G in a number of municipalities in 2017 (Proximus was also the first player to test 5G technology in Belgium, reaching speeds of up to 70Gbps).[27]

Furthermore, we note that enhanced mobile broadband (eMBB) will be at the heart of the business case for 5G across the world, including in Europe. eMBB will allow consumers to view high-quality video content (such as 4K) and enable immersive gaming experiences on the move. 5G will also help in providing last mile connectivity to the premises—potentially acting as a direct competitor to today's fixed access networks.[28]

[26] European Commission (2017), 'Europe's Digital Progress Report (EDPR) 2017, Country profile the Netherlands'.
[27] Proximus (2016), Group Annual Report.
[28] The speeds achieved by 5G networks are expected to rival those of fixed networks. For example, a collaboration between Orange and Ericsson in France recently achieved peak speeds of greater than 10Gbps. (Source: Ericsson (2017), 'Ericsson and Orange demonstrate speeds beyond 10Gbps in live 5G field trial', 25 January, https://www.ericsson.com/en/news/2017/1/ericsson-and-orange-demonstrate-speeds-beyond-10gbps-in-live-5g-field-trial, accessed 19 July 2017.). This evolution towards greater speeds has also been demonstrated by improvements to existing 4G networks. For example, EE has started deploying new technology (4x4 MIMO and 256QAM) to existing 4G sites in the UK—a move which will increase peak speeds above 400Mbps. (Source: EE (2017), 'The EE network just got even faster – Sony's Xperia XZ Premium and EE combine to reach more than 400Mbps real world download speeds', 6 June, http://newsroom.ee.co.uk/the-ee-network-just-got-even-faster---sonys-xperia-xz-premium-and-ee-combine-to-reach-more-than-400mbps-real-world-download-speeds/, accessed 19 July 2017.)

3 The role of wholesale access

This section focuses on the role of wholesale as a determinant of competitive dynamics and market outcomes for retail consumers.

Section 3.1 challenges the suggestion that the absence of wholesale access can be a strong indicator, on its own, of the existence of market failures or tacit collusion/joint dominance in the market.

Section 3.2 explains that operators in an oligopolistic market structure are likely to have incentives to offer commercial access, and that this would need to be considered in any market analysis.

Finally, section 3.3 concludes by arguing that regulators should follow an integrated approach based on the well-established *Airtours/First Choice* case law (and that of subsequent cases such as *Impala*)[29] when analysing whether a market could exhibit joint dominance in the absence of regulation, and that any approach resembling a checklist or box-ticking exercise would be inappropriate.

3.1 The absence of wholesale access is not a strong indicator of retail market failures or joint dominance

The recent policy developments summarised in section 1 have opened up the possibility that the absence of wholesale access (or commercial access on terms that do not satisfy a regulator) could become a relatively easy route for regulators to intervene in markets characterised by oligopolistic competition.

The European Parliament has explicitly suggested that refusal to supply access could be an indicator of tacit collusion, and BEREC suggests that, when assessing coordination through a joint refusal to supply access, it may be enough to show that a lack of access could result in consumer harm at the retail level.

We consider that both of these proposals would result in an undesirable reduction of the threshold for intervention. Such a threshold would be too low, as access seekers will always provide some level of competitive constraint, at least in principle. The important question is whether the competitive constraint provided by access seekers using regulated wholesale offers is likely to be material in a particular case.

A similar question arises when analysing the effects of a merger, which will always have the potential to lead to higher prices (i.e. mergers always eliminate the competition that existed between the merging firms, and upward pricing pressure is always positive). The relevant test is therefore whether such price effects are likely to be material, taking into account the specifics of the case at hand.

As noted in section 3.1 of the First Oxera Report, economic theory and empirical evidence show that oligopolies come in many flavours and even two-player markets can be highly competitive (accompanied by technology leapfrogging and rapid product and service innovation by competing networks) as a result of high product substitutability, asymmetric cost structures, and technological cycles. A retail market may thus be competitive even in the absence of wholesale access with two infrastructure operators. (Evidence of technology leapfrogging and rapid product and service innovation by competing networks in the Netherlands and Belgium is presented in Appendix A1.)

[29] Case T-342/99 *Airtours v Commission*, para. 62; and Case T-464/04 *Impala v Commission*.

As such, although wholesale access can provide additional competitive constraints, the absence of wholesale access is not necessarily indicative of a lack of competition (e.g. as a result of coordination), and should not be automatically associated with higher prices and slower upgrades.

In addition, the feasibility of coordinating wholesale access denial is low (see section 4.6 of the First Oxera Report) because the lack of credible punishment mechanisms at the wholesale level means that collusion at the wholesale level is unlikely to occur unless there is a credible punishment mechanism at the retail level. This in turn requires collusion at the retail level—i.e. retail prices are high (above Nash equilibrium levels, which requires coordination) so that a reduction in retail prices can be used as a punishment mechanism. As such, we would expect wholesale access collusion to be merely a potential add-on to collusion at the retail level rather than a stand-alone issue.

This means (as explained in section 4.6 of the First Oxera Report) that sustaining collusion at the wholesale level via retaliation at the retail level would require coordination at both the wholesale and retail levels simultaneously—wholesale coordination depends on retail coordination for a punishment mechanism, as described above, and retail coordination depends on wholesale coordination to prevent disruptions from access seekers.[30] This 'coordination of coordination' at both levels of the supply chain would seem difficult to achieve in practice, as shown in Figure 3.1.

Figure 3.1 'Coordination of coordination': retail coordination depends on wholesale coordination and wholesale coordination depends on retail coordination

Source: Oxera.

[30] At the wholesale level, retaliation can involve the provision of wholesale access by non-deviating firms. This can involve access to the access seeker supplied by the deviating network as well as to other access seekers. The feasibility of a retaliation mechanism at the wholesale level will depend on the potential to gain a first-mover advantage to the deviating network. For example, long negotiation periods may delay the ability of the non-deviating network to respond, and if there are only very few access seekers that account for the bulk of wholesale volumes then using wholesale access as a punishment mechanism will be more difficult. Hence coordination at the wholesale level will tend to be difficult because the gains from deviating are high in the case of giving access to a large access seeker, and retaliation is delayed due to the infrequency of transactions (i.e. access is sought and then agreed only periodically).

The European Commission has therefore previously focused on retaliatory mechanisms at the retail level when considering wholesale access as a punishment mechanism (for example, in the Spanish case ES/2005/0330 where, in addition to refusal to supply wholesale access, the Commission asked NRAs to prove that there were excessive rents at the retail level to protect).

As shown in section 4 of the First Oxera Report, there are relatively few findings of joint dominance by national regulators to date in the electronic communications sector. This is not surprising and should not be a cause for concern. It is likely to be a reflection of the fact that electronic communication infrastructure operators have strong incentives to compete, and consumers are receiving the benefits of competition, through high-quality networks, innovative products and services, and competitive prices, given the underlying cost of the infrastructure.

3.2 Commercial and competitive incentives to provide wholesale access in the absence of regulation

Any discussion of retail competition if the wholesale broadband market is deregulated would also need to consider whether infrastructure operators are likely to supply wholesale access on a voluntary basis, and the competitive dynamics introduced in the market by such commercial offers, before a decision is taken about whether to intervene.[31]

In this regard, we note that unilateral incentives to provide wholesale access are higher in the presence of a competing infrastructure operator, even if the competing infrastructure operator does not provide wholesale access.

Consider first *the incentives of a vertically integrated monopolist to supply access*. A monopolist's decision about whether to supply wholesale access will depend on how the wholesale profits from providing access compare with the impact on retail profits from providing such access. If the monopolist provides wholesale access it can earn wholesale profits, but it will face a competitor downstream that can steal retail customers from it. The impact on retail profits will depend on the volume of customers won by the access seeker and whether these customers are diverted from the infrastructure operator (business stealing) or are gained as a result of increasing sales that did not occur previously (market expansion).

To the extent that the access seeker expands the market, this will result in additional wholesale profits for the infrastructure operator. To the extent that the access seeker steals business from the infrastructure operator this will result in lower retail profits for the infrastructure operator. The monopolist can mitigate the business stealing effect by lowering its retail price, but this will also reduce its margin below the monopoly margin on all its sales.

Now consider *a situation where there is a competing infrastructure operator (even one that does not supply wholesale access)*. In this case, the access seeker's business stealing effect is less harmful (muted) for the access provider (the former monopolist), and it is less expensive for it to mitigate the business stealing effect.

- The business stealing effect is muted because the access seeker attracts customers from the other infrastructure operator as well (this is equivalent to expanding the market for the wholesale access provider and is especially

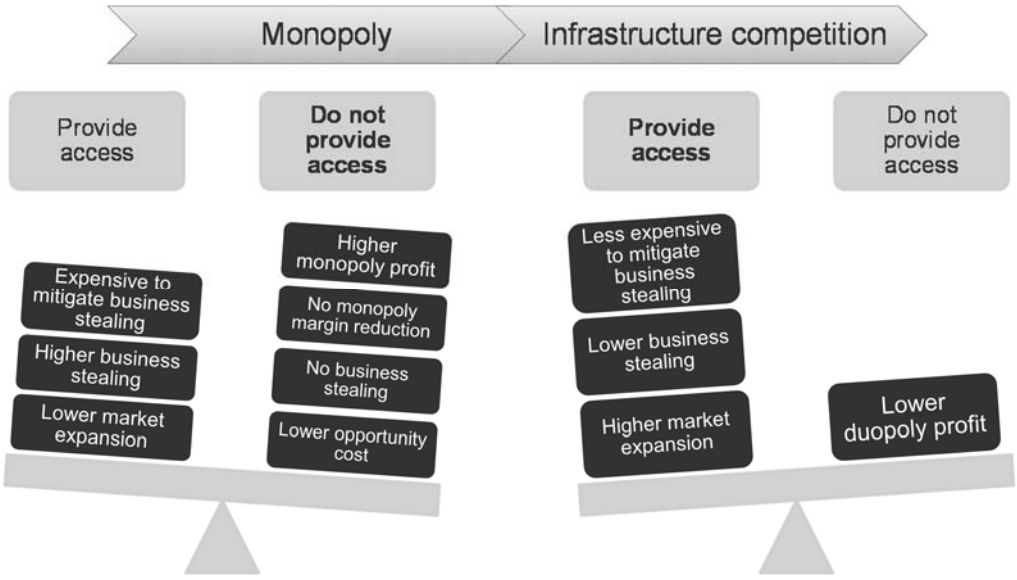
[31] By 'wholesale broadband market' we mean wholesale local access (Market 3a) and wholesale central access (Market 3b).

relevant if there is asymmetry in the retail offering of the two operators). These sales won by the access seeker are now a pure wholesale profit to the access provider.

- It is less expensive for the access provider to mitigate the business stealing effect because retail margins in the market are lower than the monopolistic case as there is infrastructure competition. This means that the retail profits earned will be low regardless of whether the infrastructure operator decides to provide wholesale access.

Thus, even when faced with the same trade-off, the presence of an additional infrastructure operator (even if this infrastructure operator does not supply wholesale access) increases the incentives for at least one of the infrastructure operators to provide access. This is illustrated in Figure 3.2.

Figure 3.2 Higher unilateral incentives to supply wholesale access in the presence of a competing infrastructure operator (even if the competing infrastructure operator does not provide wholesale access)



Source: Oxera.

We also note that incumbent operators currently providing regulated access have built up a profitable wholesale business over the years, and have already incurred fixed costs in setting up various wholesale access products and supporting services such as wholesale billing and support functions. This provides a further incentive for these operators to continue to provide wholesale access on a commercial basis to protect their existing wholesale access revenue stream and investments. Stopping provision of these wholesale access services runs the risk of losing a source of profit to a rival infrastructure operator.

Overall, the likelihood of access seekers being foreclosed as a result of infrastructure operators' unilateral incentives not to provide wholesale access is therefore likely to be significantly lower when there are two infrastructure operators than when there is only one operator.

This is not just a theoretical discussion. As reported in section 3.4.1 of the First Oxera Report, operators in the Netherlands, Belgium and Hungary offer wholesale access on a commercial basis. In addition, many mobile network operators offer wholesale access to their networks throughout Europe.

These commercial offers need to be reasonable, not just for the access-seeker, but also to ensure that providing access (and incurring the costs of defining the wholesale access reference offer, setting up wholesale access billing and provisioning systems, etc.) does not deter infrastructure operators from investing in expanding or upgrading their infrastructure.

The availability of wholesale access will also depend on the competitive dynamics in the market and the demand for wholesale access. For example, competition between the infrastructure operators may mean that there is no profitable business case for the access seeker to enter (and invest in acquiring a customer base) on reasonable wholesale terms—especially where there is little market expansion and the entry does not add value to the existing service offerings generally or for a group of consumers. Existing competition, if sufficiently strong, might not leave room in the market. Where this is the case, there would be no wholesale access, but this would be driven by the fact that competition is already strong without wholesale access.

3.3 An integrated economic approach should be followed in an ex ante context as it is in merger reviews

The discussion in the above sections and the First Oxera Report shows that increasing levels of infrastructure competition (funded by private investment) is producing good outcomes for consumers. These good retail market outcomes are based on competition on both price and non-price factors. The latter includes not only broadband speeds, the introduction of innovative services and investment, but also the provision of commercial wholesale access.

Given this, it is appropriate that an integrated approached following the well-established *Airtours/First Choice* case law as described in section 4 of the First Oxera Report is followed in a regulatory context. A checklist approach is not appropriate. In particular, the requirement for ex ante analysis is not an excuse to put more emphasis on structural elements, as such analysis will be incomplete and will not take into account behavioural factors, which are essential to establish joint SMP.

As a first step, it should be possible to analyse whether the competitive constraint provided by access seekers using regulated wholesale offers is likely to be material in a particular case. Under the modified Greenfield Approach, this would involve analysing a counterfactual of no regulated access, and assessing whether competition continues to deliver good consumer outcomes.[32] For example, regulators could analyse the following.

- Price competition: whether one infrastructure operator applies pricing pressure on the other. This could include an analysis of whether the price movements of one infrastructure operator (and its sub-brands) are coordinated or clustered in a particular market segment. If the operators come from different product backgrounds then asymmetries in their market position in different segments will lead to competition and these differences will not disappear if wholesale access is no longer regulated.

- Quality competition: which is often as important as price competition, and wholesale access seekers may have limited ability to compete with infrastructure operators in terms of offering faster speeds or introducing new services. The evidence from the Netherlands and Belgium presented in

[32] As discussed, the removal of regulated access obligations does not imply that wholesale access will not be provided on a commercial basis, and the provision of such commercial access would need to be taken into account when assessing hypothetical competitive effects.

Appendix A1 suggests that in these countries it is competition between infrastructure operators that is the main driver of these technology and product improvements.

- Independent market developments: such as evolving consumer demand (for higher bandwidth and greater service bundles), technical developments (such as the development of 5G, improvements in cable, copper and fibre technologies), together with disruptive competition from OTT providers that are independent of competition from wholesale access seekers.

There is a danger of overstating the challenges with undertaking ex ante SMP assessments. Challenges that are forward-looking and control for the effects of pre-existing regulation on the market situation exist, and are not unique to the SMP framework. Similar forward-looking assessments are undertaken as part of the merger control regime, which looks at 'strengthening or creating joint dominance' or at 'significant impediments to effective competition'. Such an analysis is also required to correctly identify the particular counterfactuals and the theories of harm that need to be remedied using regulatory tools.

4 Conclusion: high standards for intervention are appropriate to regulate oligopolies

The discussion in this supplementary paper and the First Oxera Report shows that increasing levels of infrastructure competition are producing good outcomes for consumers, measured in terms of both price and non-price factors. Furthermore, the discussion has shown that, to the extent that uncompetitive outcomes are observed, coordinated outcomes in the electronic communications sector tend to be much less stable, and thus less likely to be observed, than uncompetitive outcomes based on unilateral conduct.

For these reasons, the existing high standards for intervention should be maintained and it is appropriate that the burden of proof to intervene in an alleged case of joint dominance is higher than that for single dominance.

Otherwise, there is a risk of providing too much leeway for regulators, and the regulatory framework could end up depending on the subjective judgement of different NRAs to justify intervention. To an extent, the existing regulatory framework already depends on the subjective judgement of national regulators. However, this is exercised within the confines of a predictable and stable regulatory framework, where the tests for intervention are well understood and supported by years of case law. Changing the burden of proof of the existing tests, or introducing more subjectivity in national regulators' decisions, will open the door to inconsistencies in regulatory approaches, and have a chilling effect on investment.

Building on this, in this section we provide some concluding remarks on an important issue that has been surprisingly absent from the policy debate so far. It relates to the question of how the theories of harm that may be present in a joint SMP context can be fundamentally different from those that arise in a monopolistic (single SMP) context, and therefore how any remedies that might be imposed in the event of a joint SMP finding need to be adapted to reflect this.

When imposing ex ante regulation under the SMP framework, it is important that regulators are able to clearly articulate the nature of the market failure that is present (or would be expected to be present) in the retail market absent any form of retail or wholesale regulation—i.e. the theory of harm that ex ante SMP regulation is intended to address. This is important, because ex ante SMP regulation provides regulators with the ability to impose a wide range of obligations on firms deemed to have market power before any abuse or harm has taken place.

When there is single SMP, the theories of harm can be many and diverse. For example, there could be concerns about the dominant firm setting retail prices that are too high, and that it will not have incentives to innovate or invest in the roll-out of new technologies. Consumers would therefore experience services that are expensive and of low quality. Similarly, a firm with single SMP might engage in a host of practices aimed at slowing down the development of competition from potential rivals, such as the refusal to supply access to essential facilities, predation, margin squeeze, and cross-subsidising entry into competitive markets with profits earned in markets where it has SMP.

As a result, when single SMP is found, this may trigger the full scope of remedies permitted under the European regulatory framework: charge controls; obligations to supply access on FRAND terms; accounting separation; transparency obligations; and, in some cases, functional separation between retail and wholesale activities.

Of course, even when there is single SMP, the risk of different theories of harm arising in a particular member state will differ depending on the specific characteristics of the market. For example, there are countries where an incumbent firm faces regional competition from infrastructure operators, but is still deemed to have single SMP on a market defined nationally.

In these cases, remedies need to be tailored to address the specific circumstances—i.e. they need to be tailored to the specific market failures and theories of harm that can arise. For example, this might involve the relaxation and potential removal of remedies in geographic areas of the country where competition is more intense.

This principle—the adaptation of remedies to reflect the nature of competition—takes on particular significance where it is no longer obvious that there is just one firm with single SMP in the market, and the regulator is considering whether, nevertheless, there could be a situation of joint SMP or collective dominance. The principle of a modified Greenfield Approach also remains relevant—i.e.:[33]

> After imposing regulatory remedies at the most upstream wholesale level, a "modified Greenfield approach" should be carried out at retail level in order to determine whether ex ante regulation of a more downstream market is necessary as well in order to remedy any remaining competition problem.

In fixed markets, this situation will typically arise in markets where new infrastructure competitors (whether cable operators or wholesale-only fibre operators) have emerged as serious challengers to the incumbent's former dominant position.

The implication is that the theories of harm that might concern a regulator are likely to be different from in the past, where the market was characterised by single SMP, or, if the concerns are similar, the likelihood of these concerns materialising into actual harm will be smaller. This is because, for such concerns to materialise—in particular, the risk of high prices and limited investments in new technology—firms would need to be able to reach a coordinated equilibrium and to be able to sustain it over time. As the First Oxera Report shows, the characteristics of electronic communications markets are such that these incentives will exist in only a limited set of circumstances. Not only would firms find it hard to coordinate due to asymmetries in costs structures and business models, but in the event that such focal points could be found, the incentives to deviate would be very large, and any punishment mechanism would be too slow to be effective.

In any case, were a regulator to show that, in the absence of regulation, a market would be conducive to joint SMP, it does not immediately follow that the full suite of remedies available in the regulatory framework should be imposed on all parties in the joint SMP. Precisely because the potential sources of harm are not the same as those that existed with single SMP, it follows that the remedies imposed would need to be adapted to the situation at hand.

This is a crucial element that has been completely absent from the debate so far. The debate has focused on the standard of proof rather than on what do if the standard of proof is met.

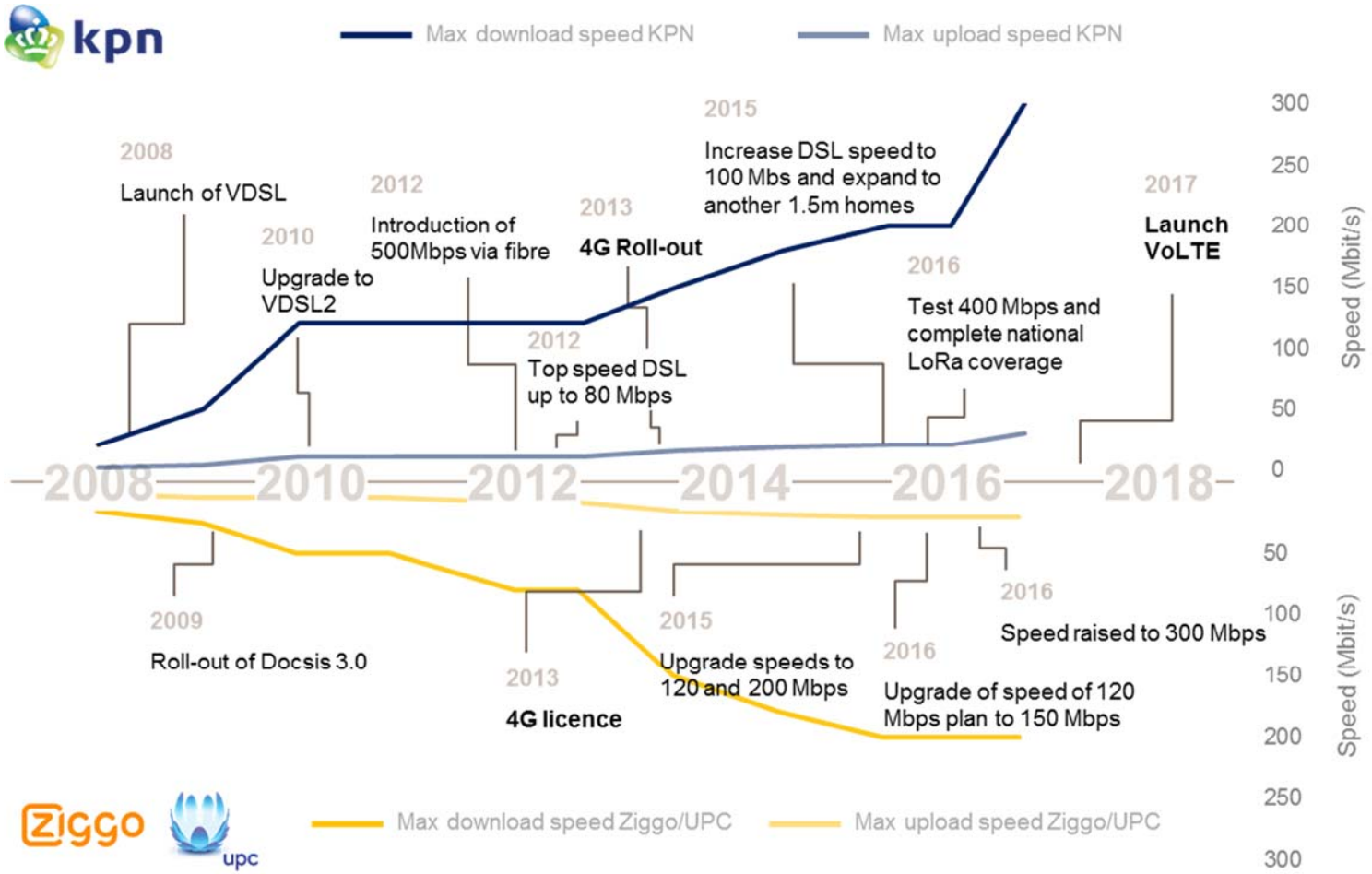
[33] European Commission (2014), 'Explanatory Note Accompanying the Document Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services', p. 35.

Based on the evidence provided in the First Oxera Report and the discussion in section 2 above, it is clear that a market with oligopolistic competition is in a much healthier position than if there were single SMP where the incumbent has reduced incentives to invest in quality and innovation.

It follows, therefore, that the remedies imposed to address the regulator's concern, especially if this were based on a market failure related to a subset of market factors, need to be light-touch and less interventionist than they would be otherwise. While it is beyond the scope of this paper to propose what type of remedies may be suitable in these situations, the preceding discussion suggests that imposing detailed wholesale access remedies, including regulating prices and determining the terms and conditions of the offer, is unlikely to be a proportionate approach.

A1 Technology leapfrogging and product innovation in the Netherlands and Belgium

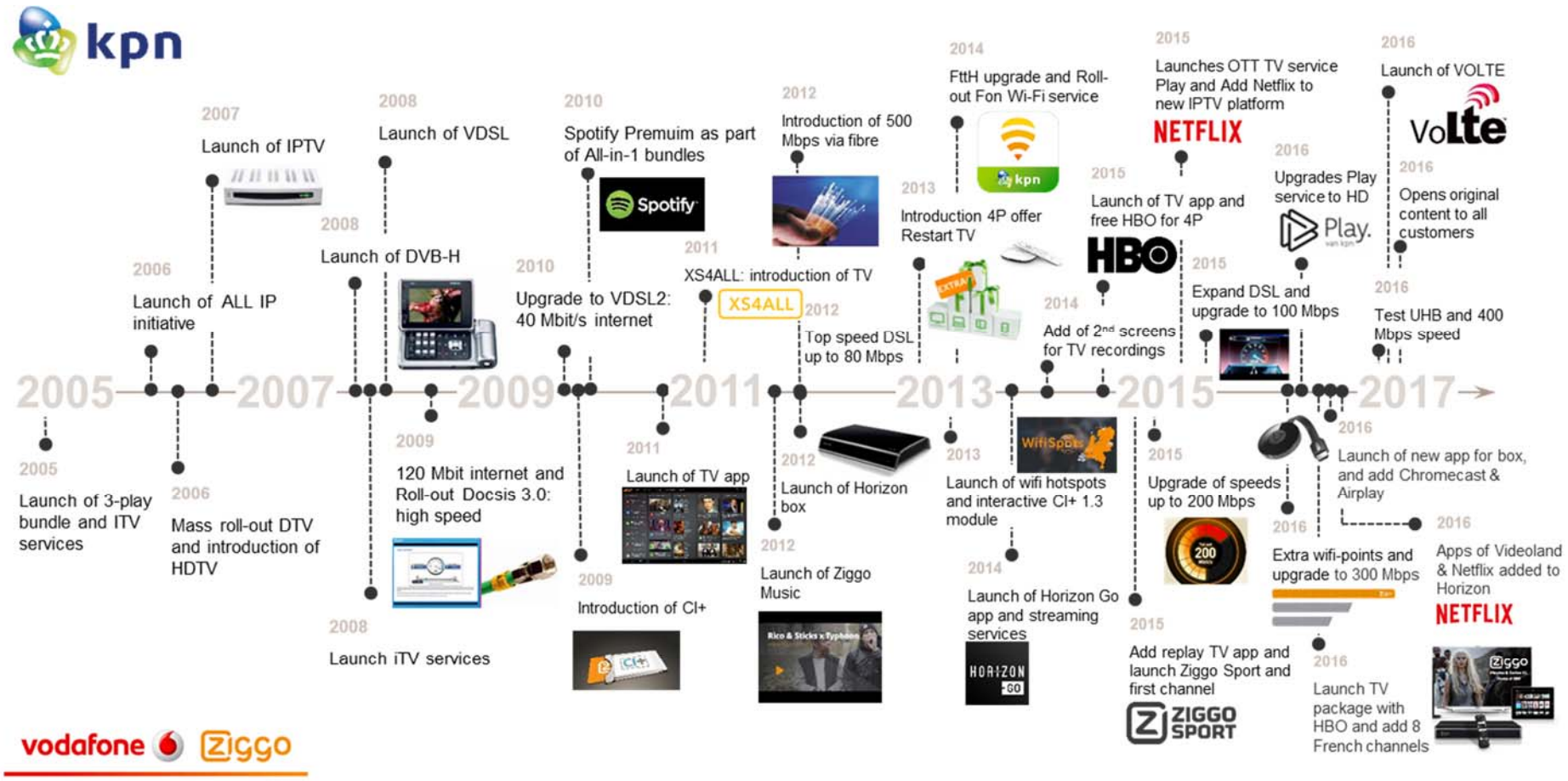
A1.1 Leapfrog effect between cable, copper and mobile networks in the Netherlands



Note: Download and upload speed data includes 11 data points from December 2008 to April 2016, and therefore might not capture all speed upgrades over the period.

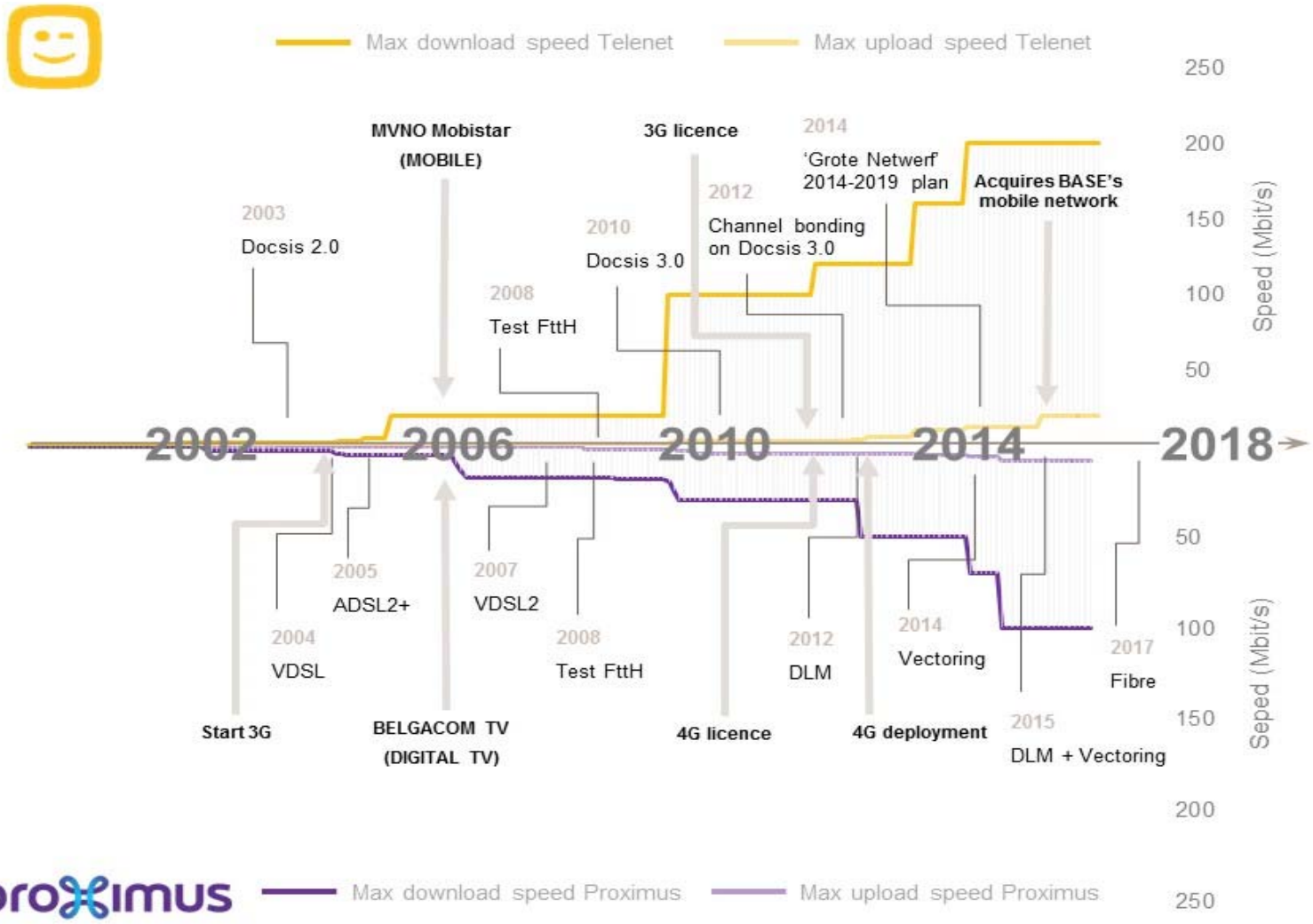
Source: Liberty Global.

A1.2 Overview of product innovation in the Netherlands



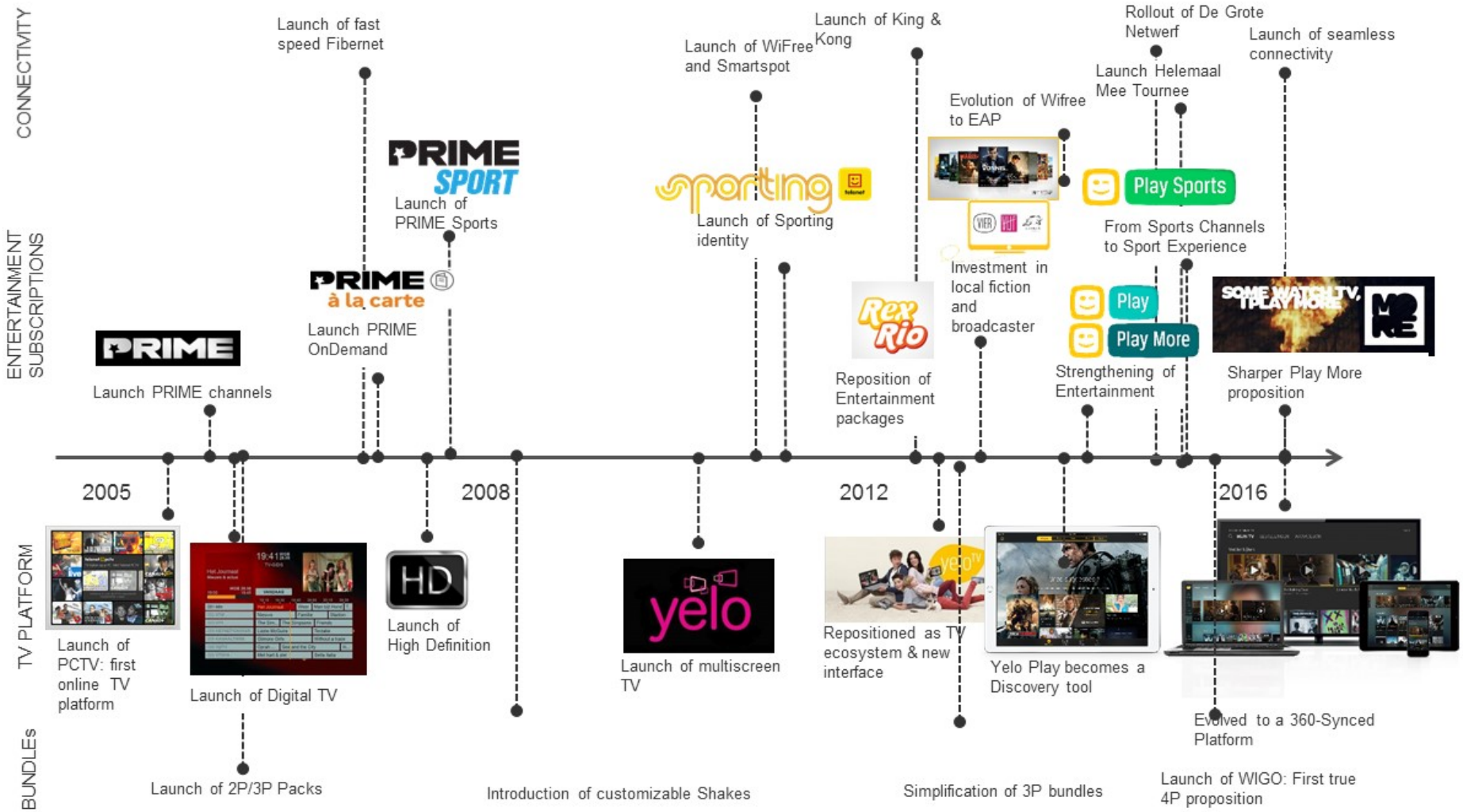
Source: Liberty Global data and Oxera analysis.

A1.3 Leapfrog effect between cable, copper and mobile networks in Belgium



Source: Van der Wee, M., Verbrugge, S. and Laroy, R. (2014), 'The Case of Belgium', in W. Lemstra and W.H. Melody (eds), *The Dynamics of Broadband Markets in Europe: Realizing the 2020 Digital Agenda*, Cambridge University Press.

A1.4 Overview of Telenet's product innovation in Belgium



Source: Liberty Global.

www.oxera.com