UK Retail Broadband Competition: Wholesale Dependencies and the Impact on the Transition to Fibre

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Contents

1 Executive summary

Ofcom is consulting on its Wholesale Fixed Telecoms Market Review (2021-26), where it proposes to amend wholesale regulations in potentially competitive areas, in order to encourage investment and competition in fibre networks. It hopes that a combination of certainty due to a longer regulatory period and more relaxed wholesale regulations will lead to greater build out of fibre networks by Openreach and alternative operators.

In finalising its proposals, it is important that Ofcom recognises both the expected benefits of its proposals, as well as costs. Any assessment of costs and benefits should recognise the interaction between wholesale and retail markets for broadband services. In particular, wholesale market pricing behaviours such as volume discounts, which may be introduced to encourage greater take-up of wholesale fibre services can negatively impact smaller broadband retailers, which can not only result in significant consumer harm, but can actually discourage fibre network roll-out.

Having grown by around 4% per annum over the last decade, the retail broadband market currently services around 80% of UK's households. The market is rapidly changing the use of underlying technologies – switching from copper towards greater reliance on partial fibre based technologies.

The retail market is dominated by the big four providers – BT, Sky, Virgin Media and TalkTalk – who enjoy significant scale economies and offer convergent services in form of triple play and other bundles. However, despite needing to overcome these entry barriers, smaller providers such as Vodafone account for much of net market growth. Although their current market share is low relative to the big four, smaller providers' pricing is continually among the lowest and there is evidence that it constrains the prices of the big four.

Smaller providers depend on wholesalers such as Openreach to provide retail broadband services, so their pricing is sensitive to changes in Openreach's wholesale charges. The current wholesale charging regime does not discriminate against smaller players and allows them access to equal pricing points as big four providers, encouraging growth. However, changes to wholesale pricing that favour big four providers, such as certain types of volume discounts, can lead to a loss of competitiveness of smaller providers who could ultimately be forced to exit the retail market. Therefore wholesale volume discounts, although initially beneficial, could result in harm to competition and consumers in the form of higher prices and lesser choice. ✂ the estimated consumer harm resulting from small provider exit and relaxation of pricing pressure, may ultimately amount to between £340 and £400 million per annum.

Majority of fixed broadband services are currently provided largely over two networks, owned by Openreach and Virgin Media, with only tentative recent competitive entry by alternative networks such as CityFibre. While investment in fibre networks has been growing, full fibre service is only available to a minority of UK households.

To stimulate further fibre roll-out, Ofcom proposes to loosen controls on Openreach, particularly in parts of the country where competitive entry is possible. While this may provide an incentive for further Openreach roll-out, alternative networks rely on significant commitments from broadband retailers, in order to achieve minimum viable scale.

Consequently, any actions by Openreach that incentivise Sky and TalkTalk (as BT will most likely buy wholesale services from Openreach) away from alternative networks, or that negatively impact smaller providers and new entrants on whom alternative networks may rely for early demand, may reduce the likelihood of competitive fibre network roll-out.

Schemes such as retroactive volume discounts are particularly capable of causing these

adverse effects. Not only would such discounts incentivise big retailers to largely or exclusively rely on the Openreach network, but any loss of competition and consolidation in the retail market is likely to make Openreach's competitors even less viable. While these effects are greatest under retractive discounts that apply exclusively on the basis of Openreach network usage, they also exist for stepped discounts, and to an extent for discounts that include alternative network usage. Loss of competitive pressure from alternative networks could, in turn, slow Openreach's fibre roll-out. Consequently, a relaxation of rules aimed at encouraging fibre network roll-out can, under certain scenarios, achieve the opposite effect.

Ofcom has proposed to rely on a 90-day notification process and assessment of any commercial terms that may harm competition, to mitigate the above effects. However, as it has itself recognised in its investigation of Royal Mail's pricing to Whistl, merely a threat of potentially harmful conduct may be enough to alter behaviour. It is therefore suggested that Ofcom considers a stronger position on volume discounts and other behaviour that may negatively impact competition in the retail market, including the possibility of their prohibition.

2 Introduction

Ofcom has published a consultation on the Wholesale Fixed Telecoms Market Review (WFTMR) 2021-26.[1] The document sets out Ofcom's detailed plans from April 2021, for regulation of the fixed telecommunications markets that underpin broadband, fixed line and business connections. As part of the consultation, Ofcom is proposing to amend wholesale regulations in competitive and potentially competitive areas with the aim of encouraging investment and competition in fibre networks. The underlying concept being behind Ofcom's proposals is that a longer period of regulatory certainty alongside more relaxed wholesale regulations, in some areas, will lead to greater investment and encourage the build out of fast, high quality, fibre networks by Openreach and alternative networks (AltNets). This is, in turn, intended to lead to greater choice, value and quality of future fixed broadband services.

The big four retail providers (BT, Virgin, Sky and TalkTalk) have a market share of c. 93%. On the other hand, smaller retailers currently provide services to c. 1.8 million customers, accounting for c. 7% of the total market. Their customer base is more price sensitive, and likely to switch providers. Smaller retailers offer greater choice in the market and they constrain larger providers to push prices downwards. However, they can be particularly affected by Ofcom's proposed regulatory changes and the increased wholesale pricing freedom that they afford to Openreach may lead to a reduction in competition at the retail level and result in consumer harm.

In particular, an introduction of volume based discounts, which are common in unregulated markets, by Openreach has the potential to increase input costs of smaller and new entrant firms relative to larger established players. This could result in greater retail market concentration, increase retail market entry barriers, and reduce the level of retail competition. Importantly, this retail market impact is likely to result in a knock-on wholesale market impact. Specifically, lower retail market competition can result in lessening of competition at the wholesale level, and reduced rollout of fibre networks. As BT and Virgin Media are not likely to use alternative networks for their retail businesses, any exit by smaller providers would leave only Sky and TalkTalk for alternative networks to provide wholesale services to, and these networks would have access to volume discounts.

The challenge to Ofcom is to develop a regulatory structure that encourages credible investment and innovation in fibre networks during the period to 2026 by Openreach and AltNets, and which is compatible with a thriving retail market which benefits end users.

Vodafone has instructed Alvarez and Marsal (A&M) Economics to set out the extent to which retail market competition may be impacted by the wholesale market and, in turn, the extent to which the wholesale market may be impacted by the retail market in the context of potential pricing freedoms being afforded to Openreach.

This report is structured as:

- Summary of the retail broadband market dynamics, and possible consumer effects of retail market rationalisation induced by volume discounts.
- Summary of the wholesale broadband market.
- Review of the relationship between retail and wholesale broadband markets, and an illustration of how changes in the wholesale market may impact the retail market and "feedback" to the wholesale market. Implications for Ofcom's policy proposals are also considered.

[1] Ofcom (2020). Promoting competition and investment in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26. Retrieved from https://www.ofcom.org.uk/__data/assets/pdf_file/0037/188956/wftmr-volume-1-overview.pdf

3 Retail market for fixed broadband

The retail broadband market in the UK is vibrant, servicing 80% of households and growing by a CAGR of c. 4% per annum over the last decade. The market has embraced technological change, and the majority of connections since 2017 have been based on fibre technologies in full or in part, with FTTP now growing strongly. By 2018 superfast broadband accounted for nearly half of connections.

The market is dominated by the big four providers – BT, Sky, Virgin Media and TalkTalk – who together have a market share of c. 93%. However, a series of other smaller broadband retail providers, which include Vodafone, OVO and Post Office, account for most of current market growth. While the smaller retailers current market share is low relative to the big four, their service pricing is continually among the lowest, as this is the main lever available to them in driving growth, particularly as they base their services on the same underlying Openreach product. There is evidence the pricing behaviour of the smaller broadband retailers constrains the prices of the big four and, for some products, a smaller retailer is the price leader on lower market prices.

Smaller providers depend on wholesalers such as Openreach (and more recently, albeit to a lesser extent, CityFibre) to provide retail broadband services. Their pricing is sensitive to changes to Openreach's wholesale charges. Consequently, changes to wholesale pricing that favour big four providers, such as certain types of volume discounts, could lead to a loss of competitiveness of smaller providers and their ultimate exit from the market. Over time, this could result in harm to competition and consumers in the form of higher prices and lesser choice.

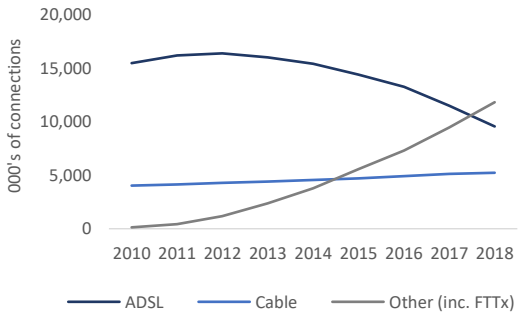
It is estimated that smaller providers bring a consumer benefit of price savings of between £340 and £400 million.

3.1 State of the retail market for fixed broadband

Retail broadband providers in the UK currently connect over 27 million and service over 80% of households[2]. This has been achieved by steady growth over the last decade with an annual CAGR of 4%.[3] Whilst all customer groups have gained from this, the take up of services has been lowest amongst older consumers and those of lower socio-economic standing[4].

This growth has been delivered through significant changes in technology, with the decline in ADSL being more than replaced by the use of FTTC and FTTP.

Figure 1: Broadband technologies, 2010-2018



Source: Ofcom (2019). Telecoms data updates

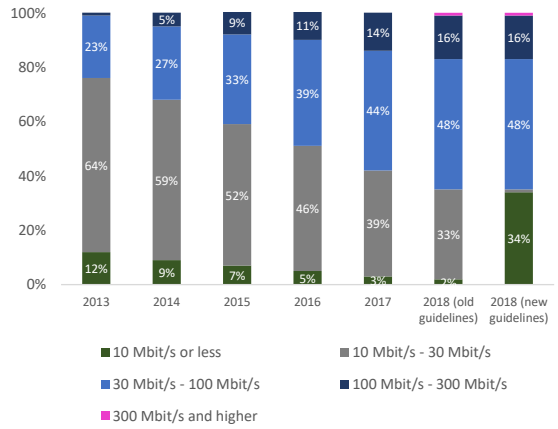
[2] Ofcom (2019). Telecoms data updates.

[3] Ofcom (2019). Telecoms data updates.

[4] Ofcom (2018). Access and inclusion in 2018.

These developments have enabled greater speeds, notably a growth in superfast broadband[5], whilst the use of standard broadband has proportionately declined. Such increases in speeds have allowed customers to better receive bundles of products (including broadband, phone and television services).

Figure 2: Broadband speeds, 2013-2018



Source: Ofcom (2020). WFTMR Volume 2: Market assessment

The proportion of new connections that are superfast and ultrafast[6] broadband is widely expected to continue. The growth in superfast broadband, in particular, is supported by:

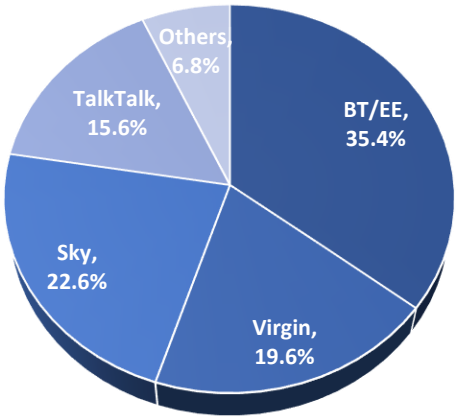
a) Equal access for all providers to Openreach's price points, with adoption targets set in relation to market size; and

b) A diminished premium for superfast products due to Openreach's current rebate structure

Current consumer choices have resulted in the big four broadband providers combined having c. 93% of the retail broadband services market. The big four primarily provide bundled services to customers, usually bundling broadband with landline, and frequently also with pay TV.

In contrast, smaller retailers offer a range of broadband, fixed line and mobile telephony packages but tend not to focus on pay TV services. Smaller providers offer a variety of broadband speeds depending upon wholesale provision, but mainly offer double-play (broadband and landline) or other types of bundles excluding pay TV on the 30-100 Mbps segment to c. 1.8 million consumers.[7]

Figure 3: Broadband market shares, 2020



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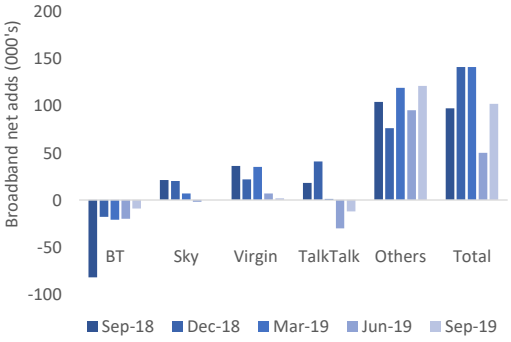
Although the big four dominate the market in terms of volume, the growth in the consumer base is coming from outside this group. While the growth of all big four retailers is trending towards zero, smaller providers have been increasing their customer bases significantly over the last two years.

Figure 4: Broadband organic net adds, 2018-2019



Source: Enders Analysis (2019). UK broadband, telephony and pay TV trends Q3 2019: Darkest before dawn.

3.2 Pricing of fixed broadband services

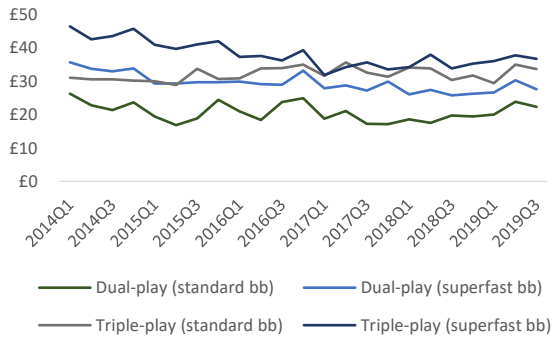
The pricing of broadband services can appear complex with various packages offerings

[5] Superfast broadband speeds range from 30Mbps to 300Mbps.
[6] Ultrafast broadband speeds range from 300 Mbps to 1 Gbps.
[7] Vodafone (2020). Internal document.

different speeds, contract terms and bundles. However, it is apparent that[8]:

- Customers often purchase in bundles (four in five UK households buy more than one communications service from the same provider), and that such bundles lead to significant pricing discounts.
- Some customers are missing out on the benefits of competition in the retail broadband market. Notably, 41% of broadband customers were out-of-contract by November 2018 and such customers typically pay an average of £9-10 per month more than new customers and £8-9 more than those who re-contract. Big providers, in particular, include sizeable price increases following the initial contract period (step-up pricing), with smaller providers imposing significantly lower increases. For example, as at April 2020, Vodafone's 67Mbps post contract price increase was only £3.

Figure 5: Average monthly promoted prices for dual and triple-play[9]

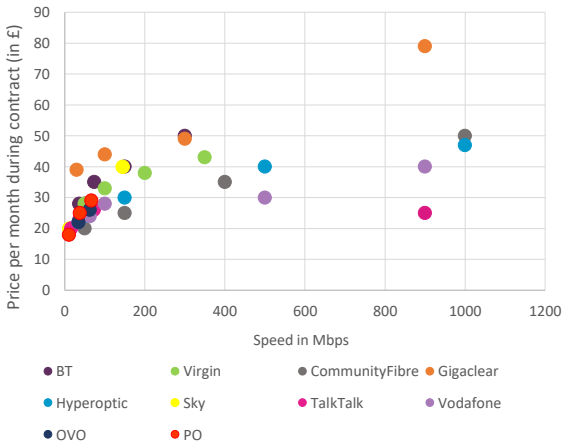


Source: A&M analysis (2020). Based on Ofcom's Pricing Report Data (2019)[10]

Extending some valuable work by Ofcom demonstrates the range of broadband and landline products in the market today[11]. Broadly, this suggests that:

- BT offers the most expensive dual-play packages. For example, its usual 67Mbps price is £39.99 per month (currently discounted to £34.99, as at April 2020).
- Virgin Media and Sky are generally less expensive than BT, with Virgin Media in particular offering faster speeds at a lower price. For example, Virgin currently offers 100Mbps at £33 per month.
- TalkTalk, Vodafone, OVO and the Post Office have largely comparable offerings at the lower end.
- At faster speeds, the cheaper providers' pricing (TalkTalk and Vodafone's) is somewhat divergent, mainly due to current special offers. Vodafone's current 63MBps special offer, for example, is £22.95 per month.

Figure 6: Advertised dual-play prices and headline broadband speeds by broadband provider, March 2020



Source: A&M analysis (2020). Based on providers' websites.

There are some interesting dynamics with respect to the pricing of Vodafone, and it is expected to be similar for other smaller providers:

- Vodafone consistently (with very few exceptions) prices lower than the big four, when considering comparable products.

[8] Ofcom (2020). Pricing trends for communications services in the UK.
[9] Dual-play packages include landline and broadband. Triple-play packages also include pay TV.
[10] Note: Represents average of the cheapest available tariff of BT, Plusnet, Virgin Media, TalkTalk, Sky and EE at the end of each quarter; promotions include the promoted price and any 'gifts' offered; adjusted for CPI (September 2019)
[11] Ofcom (2020). WFTMR Volume 2: Market assessment

- For some products, Vodafone appears to be the price leader. For example, when considering 76 Mbit/s (or similar) product, Vodafone consistently priced at the low end with other providers (aside from BT) converging on its pricing over time. To achieve this, it relies on access to wholesale pricing equivalent to that accessible to the big four providers.

Figure 7: Headline monthly price trend, 38-52 Mbps, 2017-2020

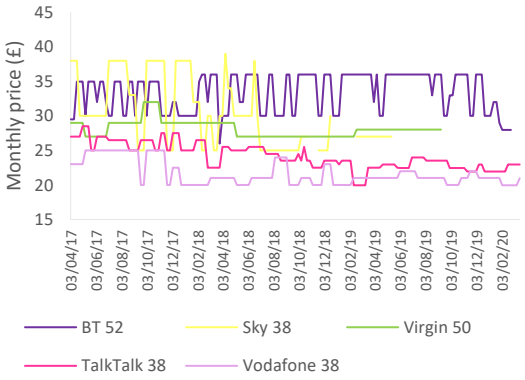


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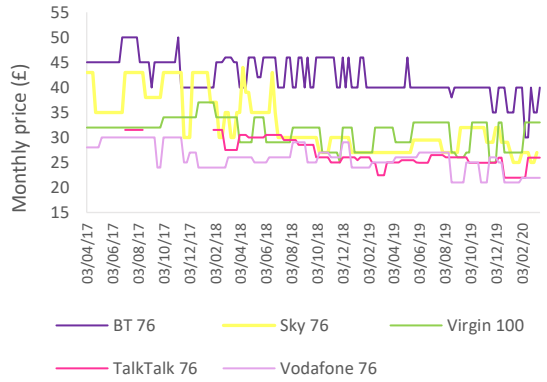
Figure 8: Headline monthly price trend, 76-100 Mbps,



2017-2020

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3.3 Retail fixed broadband market segmentation

When choosing a broadband provider, customers consider a number of factors, with the most important ones being price and speed.[12] The performance of each provider against customer criteria is shown in Table 1. With regards to price and speed, smaller providers' offerings perform better than average.

Table 1: Factors considered when choosing broadband provider

Provider	Price	Speed	Reliability	Bundle	Special offers	Coverage
BT		✓		✓	✓	✓ ✓
Sky			✓	✓ ✓		
Virgin Media		✓ ✓	✓	✓ ✓		
TalkTalk	✓					✓
Others	✓ ✓	✓				✓

Source: A&M analysis (2020). Based on review of providers' offerings.

In order to understand the way in which retail broadband market operates, and therefore the impact of any changes to its regulation, it is important to understand the extent to which groups of consumer form market segments and have different purchasing and switching behaviours. This should form part of the retail market analysis which Ofcom undertakes.

Ofcom recognised this issue and commissioned a switching tracker study in 2019. The key results of this work are briefly set out here and suggest that the customer base of smaller providers, ✂, differs from the big four's. When results are combined, these differences mean that smaller providers' consumer base is more likely to switch. Consequently, impacts of price changes due to increases in wholesale costs are likely to be greater for smaller providers than the big four.

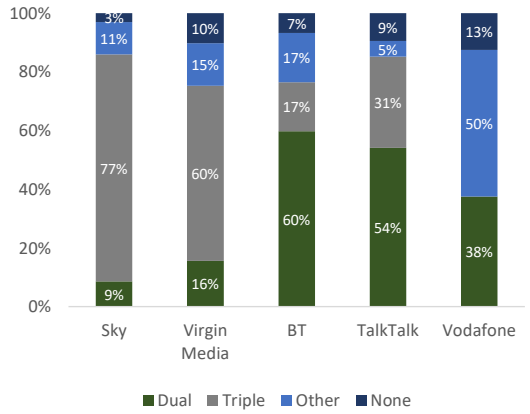
Smaller providers tend to compete on price, and while their precise customer break-down will vary, it is likely they will attract a more

[12] Kantar (2013). Transparency in internet traffic management.

price-conscious customer base, who is more likely to switch in case of price changes.[13]

There are clear differences in bundling across the market. ✂ a majority of customers are in "other" bundles. These are mostly bundles of fixed line, broadband, and mobile services.

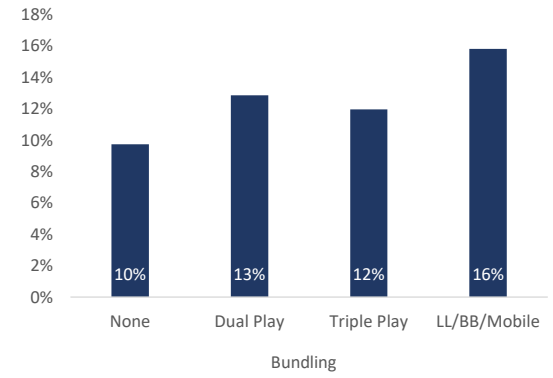
Figure 9: Bundle choice by provider



Source: Ofcom (2019), Switching tracker.

Switching tracker data shows that customers bundling mobile, landline and broadband are more likely to switch than those on triple-play bundles that include pay TV, those on dual-play (broadband and landline), and those on a single service.

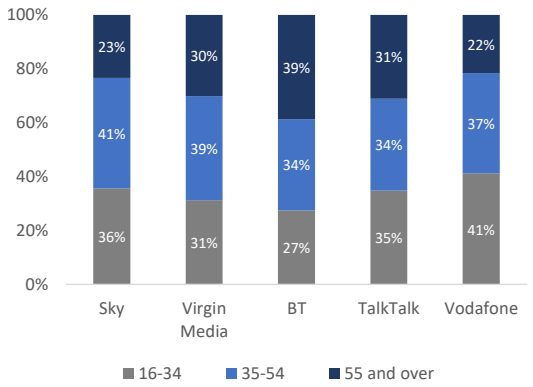
Figure 10: Customer switching behaviour by bundling in the last 12 months



Source: Ofcom (2019), Switching tracker.

Smaller providers also appear to have a younger customer base than other providers.

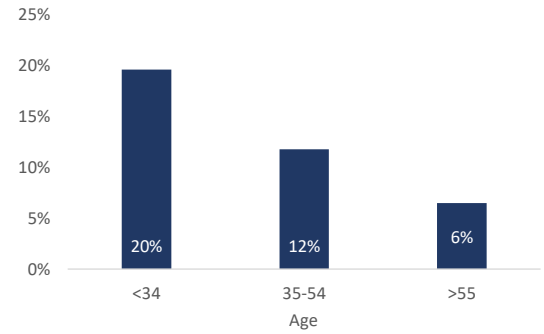
Figure 11: Customer breakdown by age and provider



Source: Ofcom (2019), Technology tracker.

Given that younger and middle-aged customers are more likely to switch broadband providers, providers with such a younger customer base are more exposed to customers changing their purchasing decisions following changes to the structure of the market.

Figure 12: Customer switching behaviour by age in the last 12 months



Source: Ofcom (2019), Switching tracker.

Finally, lower income customers are more likely to be price sensitive.

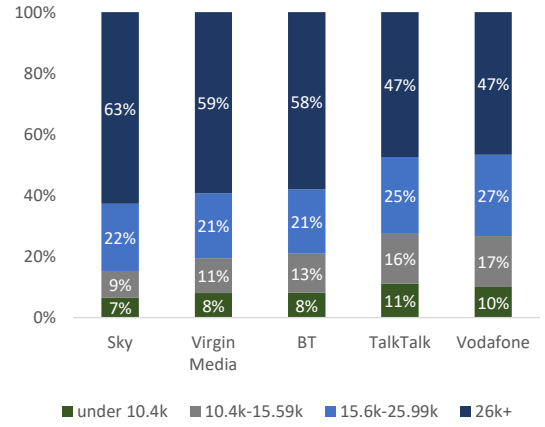
Figure 13: Customer switching behaviour by income in the last 12 months

[13] It is important to note, however, that while this analysis is carried out on Vodafone's customer base due to data availability, it is expected to yield similar results for other smaller providers.

Source: Ofcom (2019), Switching tracker.

Data from Ofcom suggests that TalkTalk and Vodafone have a higher proportion of lower income consumers than Sky, Virgin Media and BT; and as such their customer base is more prone to switch. It is expected than other smaller providers face a similar situation given their lower prices.

Figure 14: Customer breakdown by income and provider

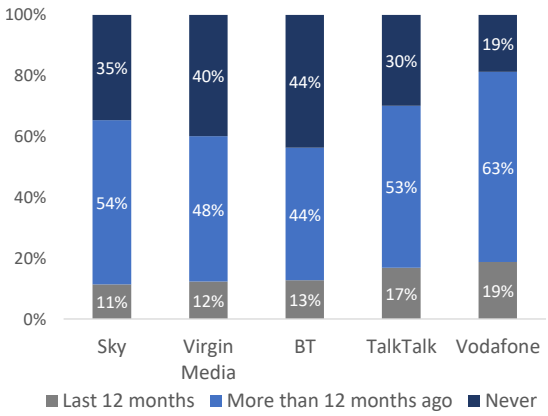


Source: Ofcom (2019), Technology tracker.

The impact of these characteristics is consistent with Ofcom's overall switching tracker results, which showed that Vodafone's customers were more likely to have switched during the preceding 12 months. As noted earlier, similar results are expected for other smaller providers.[14] This suggests that the demand ✂ customers is more elastic than that for larger providers.

[14] An extension of this study would cover all smaller providers, although additional data would be required to make a more meaningful assessment.

Figure 15: Customer switching behaviour by provider



Source: Ofcom (2019), Switching tracker.

3.4 Summary of impact of volume discounts on the retail market

As smaller providers largely depend on Openreach for wholesale broadband input into their retail services, Openreach's pricing has an impact on their retail offering. This impact is generally larger for smaller providers than big four providers as smaller providers' customers are on average more price sensitive.

Chapter 5 illustrates the relationship between wholesale pricing and retail pricing, and the impact of volume discounts on both wholesale and retail markets. It concludes that volume discounts in the wholesale market make it less likely that smaller providers can recover the levels of investment required to achieve minimum efficient scale, so that the retail market is more likely to condense around the big four providers. While this process may yield consumer benefit in the short term (as wholesale volume discounts are at least partially passed on), consumers are likely to suffer in the longer term.

3.5 Consumer impact

The benefits to consumers from smaller retailers operating in the market, such as lower prices and greater choice, can be grouped by

type of consumer in order to estimate the overall benefit of smaller providers:

- In-contract consumers benefit from lower prices due to smaller providers constraining larger providers. In the absence of this pressure, prices could be at the levels of 2014/15[15];
- Out-of-contract consumers with smaller providers[16] benefit from lower step-up pricing at the end of their contract, compared to larger providers. In the absence of smaller providers, these consumers would be taking more expensive products from larger providers; and
- Out-of-contract consumers with larger providers benefit from lower step-up pricing, since smaller providers are probably able to constrain not only listed prices but step-up pricing as well, albeit to a lesser degree.

The likelihood of the first two benefits materialising due to smaller providers being active in the market is relatively high. However, the third benefit considers that smaller providers not only influence larger providers' listed prices, but also their step-up pricing, which is less likely.

Some key assumptions have been used to estimate the impacts of the three effects, including[17]:

- Out of the 27 million connections, 41% are out-of-contract and 59% are in-contract.
- The benefit has only been calculated for customers in 30-100Mbps speed range (the superfast range). This may be conservative as superfast pricing would have some impact on standard products in particular. For example, it could act as a type of a cap, and could put pressure on standard broadband pricing. The latter has not been calculated.
- ✂.
- An 80% reversion to past pricing (£6) affecting all in-contract customers who take dual-play bundles or bundles excluding pay TV is assumed.
- Given the lower impact of double-play prices on triple-play prices (where smaller providers are not particularly active as they do not generally offer pay TV), a 40% reversion to past pricing (£6) for triple-play and bundles including pay TV is assumed.
- Average step-up pricing by the big four providers is £9[18] and by smaller providers is £3.[19]

It is estimated that the combined consumer benefit of the first two effects is c. £340 million a year, while the benefit of all three effects for consumers, due to the positive impact of smaller providers on the market, is as much as c. £400 million a year.

[15] Before the entry of smaller players that disrupted the market, such as Vodafone in 2015.

[16] ✂.

[17] The full methodology and list of assumptions can be found in Appendix 2.

[18] Ofcom (2020). Pricing trends for communications services in the UK.

[19] ✂.

4 The wholesale broadband market

Fixed broadband services are provided largely over two networks, owned by Openreach and Virgin Media, with only tentative competitive entry by AltNets such as CityFibre. While investment in fibre networks has been growing, a full fibre service is only available to a minority of UK households. Ofcom expects that the roll-out of full fibre infrastructure will gather significant pace, with Openreach and AltNets planning extensive roll-out. However, the rate at which AltNets are building is unlikely to be fast enough to exercise a constraint on Openreach.

To stimulate fibre roll-out, Ofcom has proposed to loosen regulatory controls on Openreach, particularly in geographic areas where Ofcom believes that competitive entry may be a possibility. This may provide an incentive for further Openreach roll-out, but may also afford Openreach pricing freedoms to allow it to price discriminate. AltNets rely on significant commitments from broadband retailers in order to achieve minimum viable scale, however they are not able to compete with Openreach on a national basis. So, an Openreach pricing scheme that locks in customers to Openreach across all geographies has the potential to harm competition.

Fixed broadband services in the UK are largely provided over two networks owned by Openreach and Virgin Media, with CityFibre having entered the market more recently. All the networks are investing in fibre to some extent, however as of September 2019, full fibre was accessible to only 10% of UK households.[20]

To encourage investment in full fibre rollout, Ofcom's WFTMR sets out different approaches to regulating Openreach in different parts of the country, according to the current competition level. In competitive and potentially competitive areas, Ofcom proposes loosening wholesale regulations to in encourage investment and competition in fibre network based on the premise of:

- Increasing demand for high speed, high capacity broadband services, offering a source of competitive advantage to new fibre networks; and
- Improvements in the economics of building new networks due to new deployment techniques and better access to existing infrastructure.[21]

To achieve a viable minimum efficient scale, AltNets are reliant on orders from retailers. Enders Analysis (2020) suggests that Sky will be key to mainstream AltNet success, but the retailer will be a tough negotiator, unlikely to rush into long-term commitments.[22]

Further, AltNets' reliance on broadband retailers can be evidenced by their willingness to sign exclusivity deals, at the risk of losing out on other contracts. The CityFibre/Vodafone deal gives Vodafone exclusive rights to sell broadband on CityFibre's first million full fibre lines, with speeds reaching 900 Mbps. Vodafone has since relaxed their exclusivity provisions which will further support CityFibre's growth.[23] Subsequently TalkTalk has also agreed to a wholesale contract with CityFibre after the announced acquisition of FibreNation, TalkTalk's wholesale fibre arm.[24]

Other smaller retailers still rely solely on Openreach. More recently, however, several

[20] Ofcom (2020). WFTMR Volume 2: Market assessment.
[21] Ofcom (2020). WFTMR Volume 2: Market assessment.
[22] Enders Analysis (2020). Winners and losers as the UK fibres up.
[23] See: https://www.vanillaplus.com/2020/01/21/50155-vodafone-drives-forward-full-fibre-broadband-roll-uk/
[24] Reuters (2020). UK's CityFibre buys TalkTalk's York fibre network for 200 million pounds. Retrieved from https://www.reuters.com/article/us-talktalk-tlcm-gp-cityfibre/britains-talktalk-sells-fiber-network-to-cityfibre-for-200-million-pounds-idUSKBN1ZK0L4

new network providers such as Hyperoptic and Gigaclear have entered the market as vertically integrated providers offering fibre services.[25]

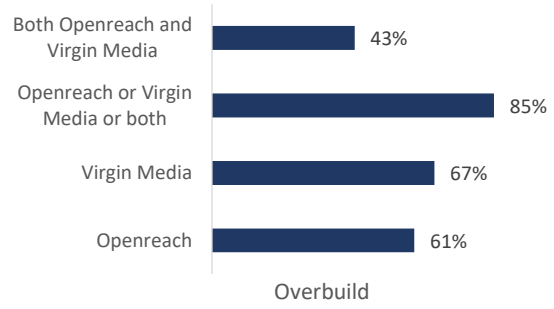
Table 2: Current coverage of premises passed (excluding Openreach)

Network provider	Current coverage
Virgin Media	15.7 million
Hyperoptic	0.5 million
CityFibre	0.1 million
FibreNation	0.04 million

Source: A&M (2020). Based on providers' websites.

This presents overbuilding issues with respect to Openreach's network. Looking at CityFibre's stated targeted cities, there is a substantial overlap with Openreach's full fibre build and Virgin Media's.

Figure 16: Overbuild of CityFibre's build plans, 2020



Source: Enders Analysis (2020), Winners and losers as the UK fibres up.

AltNets' investors may be discouraged by this, as they hope their investments enjoy a quasi-monopoly status.[26] Further, the overbuild problem will only worsen as Openreach's build gathers pace. The incumbent is accelerating the rollout of its ultrafast broadband with G.Fast and fibre-to-the-premises (FTTP) technology, which currently covers approximately four million premises, but the company has plans to extend its FTTP footprint to 15 million premises by the mid-2020s.[27]

By the end of 2019, CityFibre was building at a rate of 15,000 premises per month. By comparison, Openreach was building at the rate of 100,000 premises per month. Assuming Cityfibre had been able to start at a full-build rate in 2019, then over three years Cityfibre would have needed to build at around 28,000 premises per month in order to reach the target of 1 million premises by 2021 in time.[28] CityFibre and other AltNets are therefore at a disadvantage with respect to Openreach, which will consolidate earlier in currently uncovered areas by trying to lock-in retailers.

Ofcom is aware that planned deployments by new entrants depend on a number of factors, such as access to Openreach's national network of poles and ducts (already regulated) and the ability to sell wholesale access to retailers. This ability to sell wholesale access to retailers has already been truncated to an extent by Openreach's deployment of competing interim technologies, such as G.Fast. As discussed in detail in the next chapter, the latter is of particular importance in light of the proposed deregulation of Openreach.

Ofcom's goal for the WFTMR is to create "the conditions to transform the business case for investment in full fibre broadband through how [they] regulate BT" by "removing barriers to help the rollout of fibre networks right across the UK – including areas that are hard to reach." It is proposing looser controls that vary by geography:

- In competitive areas Ofcom proposes not to have any controls on Openreach;
- In potentially competitive areas, where competitors are beginning to or could start rolling out competitive infrastructure it proposes that:

[25] Gigaclear and Hyperoptic are at opposite ends of the geographic cost curve, with Gigaclear focused on expensive rural areas and Hyperoptic solely on cheap-to-serve MDUs.
[26] Enders Analysis (2020). Winners and losers as the UK fibres up.
[27] Ofcom (2020). WFTMR Volume 2: Market assessment, p 5.
[28] ISP Review (2019). Cityfibre Hit 100K UK Premises FTTH Broadband Build Milestone. Retrieved from https://www.ispreview.co.uk/index.php/2019/10/cityfibre-hit-100k-uk-premises-ftth-broadband-build-milestone.html

- Openreach will be required to provide a 40/10 basic service at a regulated rate, which will be flat, and inflation adjusted
- Openreach will be able to charge slightly more where it provides the service over FTTP rather than FTTC
- Higher speed products will not be subject to regulated rates
- Geographic discounting will be prohibited
- Openreach will be given 90 days' notice when introducing terms that may create a barrier to using AltNets (e.g. loyalty discounts), allowing Ofcom to assess impact and acceptability. Existing powers are to be used to prohibit any arrangement it considers would deter AltNet rollout; and

- In non-competitive areas, set cost-based prices based on RAB approach. If there is a firm commitment to rollout in, can include the cost of this in prices before rollout is complete.

The loosening of controls would potentially allow Openreach to offer volume based discounts in some products including superfast and ultrafast wholesale fibre access. Volume discounts can take several forms and may be harmful to competition. For example, these include stepped and retroactive discounts, particularly when combined with exclusivity (where the wholesaler requires buyers to purchase most or all of their requirements from them).

An important consideration the potential impact that the relaxation of pricing controls on Openreach could have on the market and whether these could have the opposite effect to that intended by Ofcom: a reduction in retail competition and fewer incentives to invest in full fibre. This is explored further in the next chapter.

5 Wholesale-retail-network market dynamics

Changes in the wholesale markets can impact consumers through their effects on retail market and network provision, but these retail market effects can also have an impact on the wholesale market. Given Ofcom's goals of removing barriers and assisting roll-out of fibre networks across the UK, the impacts of the retail market on the wholesale market take on increased importance

To achieve a viable minimum efficient scale, AltNets are particularly sensitive to demand from broadband retailers. Consequently, any actions by Openreach that incentivises Sky and TalkTalk (as BT will most likely buy from Openreach) away from AltNets, or that negatively impact smaller providers and new entrants on whom AltNets may rely for early demand, may reduce the likelihood of competitive AltNet fibre roll-out.

Schemes such as retroactive volume discounts are particularly capable of causing these adverse effects. Such discounts might not only incentivise larger retailers to largely or exclusively rely on the Openreach network, but may also result in a loss of competition and consolidation in the retail market. In addition to putting direct pressure on AltNet pricing and profitability, any consequent exit of smaller retailers may make AltNets even less viable. Loss of competitive pressure from AltNets could, in turn, slow Openreach's fibre roll-out.

Retail-wholesale market dynamics in broadband are characterised by feedback loops; shocks in the wholesale market have effects on the retail market and vice-versa.[29] For example, a price increase in the wholesale market is translated into higher input cost for retailers. Smaller providers with higher customer acquisition costs, lower margins and more price responsive customer base are less likely to be able to absorb or pass on such increases, hampering their ability to compete and gain market share.

These linkages extend to the markets for FFTC and FTTP network provision, with implications for fibre roll-out and competition among network providers. Network providers, particularly AltNets, are likely to require sufficient scale and commitment from the retail market to roll out infrastructure.

Ofcom's WFTMR sets out that Openreach could implement volume discounts with the intention of discouraging retailers from buying wholesale access from alternative providers, which could undermine network roll-out.

Ofcom has therefore proposed that any changes to commercial terms that may negatively impact competition, such as volume discounts, would have to be notified and be subject to review in a 90-day period. However, this level of protection may not be enough. Ofcom recognised in its investigation of Royal Mail's pricing to Whistl, that the threat of a potential price change is sufficient to alter behaviour: "Royal Mail's conduct was reasonably likely to put other companies at a competitive disadvantage, and restrict competition from the moment the price changes were notified."[30]

5.1 Wholesale volume discounts

Impact on the retail market

As discussed further in Appendix 1, the potential impact of volume discounts is likely

[29] Refer to Appendix 3 for a model illustration.
[30] Ofcom (2018). Royal Mail fined £50m for breaking competition law. Retrieved from: https://www.ofcom.org.uk/about-ofcom/latest/features-and-news/royal-mail-whistl-competition-law

to vary by level of discount and design of the scheme.

Stepped discounts

Stepped discounts are schemes where the discount increases with the volume purchased and is applied to incremental units. Stepped discounts are considered a form of loyalty rebates since they can create threshold effects that begin to incentivise lock-in of buyers. This, in turn, can restrict new entry at the wholesale level as retailers find it more expensive to switch.

Retroactive discounts

Retroactive schemes are loyalty discounts that increase with the volume purchased. This kind of discount is applied to all units retroactively over a reference period and make it highly likely to generate strong lock-in effects.[31] Retroactive discounts might not only restrict new entry at the wholesale level due to higher switching costs, but can also lead to market consolidation at the retail level, with larger retailers passing on the discount into price decreases that smaller providers cannot match.

Stepped discounts and retroactive discounts can be further intensified by an exclusivity component.

Empirical illustration of the effects of volume discounts on the retail market

✂

✂

Should Openreach implement volume based discounts, larger providers such as BT, Sky and TalkTalk are likely to pass through some or all of their wholesale fibre rental discount to consumers.[32] ✂, an illustrative 10% wholesale fibre rental cost advantage that large providers could attain due to a retroactive volume discount would result in large providers improving their pricing by c. 3% versus smaller providers.[33]

✂ fibre rental costs are likely to make up a higher proportion of total costs for larger providers due to lower customer acquisition costs and greater economies of scale. Therefore the above pricing advantage due to volume discounts is a conservative estimate.

Additional difficulties for smaller retailers

Smaller retailers and any potential new entrants face additional hurdles in customer acquisition compared to the big four broadband retailers. As evidenced in chapter 3, smaller retailers mainly compete on price to gain market share, with noticeable price differentials between them and the big four for comparable broadband products. Further, the customers of smaller retailers are more likely to switch providers and be more sensitive to price changes. As outlined earlier, customers' relative age, level of income, and type of bundling are associated with greater levels of switching. Given that smaller retailers are usually cheaper, it is likely that these types of consumers make up most of the smaller retailers' customer base.

Further, smaller retailers' current margins are low due to:

- A higher share of customers being new additions and the cost of acquisition being higher than the costs of retention (due to lower brand awareness) whilst new customers also typically pay lower prices.
- Relatively higher customer acquisition costs. Given that the brand awareness in broadband is low, small providers depend

[31] See Appendix 1 for reference of cases where retroactive rebates were ruled anticompetitive. For example, *Post Danmark II (2015)* and *British Airways (2007).*

[32] Alternatively, they can use increased margin to strengthen their brand through promotion.

[33] A&M analysis (2020). Based on Vodafone's internal data.

on more expensive channels to acquire customers, such as price comparison websites (e.g. Uswitch).

- Having to use lower pricing to attract customers from larger brands, as shown in section 3.2.
- Higher unit costs due to operating below minimum efficient scale.[34]

Profitability data illustrates that it takes a considerable amount of time to achieve minimum efficient scale, with high acquisition costs being one of the main factors driving negative margins.[35]

✂

A price sensitive customer base combined with low current margins on the core FTTC products is likely to make smaller retailers more susceptible to cost shocks than larger more established retailers. Volume based wholesale discounts are a cost shock, increasing the input costs of smaller retailers relative to BT, Sky and TalkTalk.

If the larger retailers pass a significant proportion of their volume discount to customers (which they may well do given the competitive retail market), smaller providers would not be able to match the price reduction and will be left in a competitive disadvantage. Specifically, they would not be able to maintain the existing retail price differentials that have supported their customer acquisition to date. As noted earlier, smaller providers provide an average cost saving to consumers of as much as £400 million per annum. A small but significant reduction in the price differential, such as the hypothetical c. 3% above, could lead to:

- A significant loss of customers over time through switching; and
- A lower ability to attract new customers through aggressive pricing.

A slowdown in the growth of customer base could be highly damaging to the viability of smaller providers' longer term prospects in the retail broadband market. These brands will be investing in customer acquisition to achieve minimum efficient scale.[36]

Volume discounts within accessible tiers in the wholesale market make it less likely that smaller providers can recover the levels of investment into customer acquisition required to achieve minimum efficient scale. As a result, the retail market is more likely to condense around the big four providers as smaller entrants eventually leave the market or indeed stop investing now.[37]

Impact on network competition and roll-out

Network competition

Consolidation in the retail market, particularly if smaller retailers exit, will have a direct impact on the viability of alternative fibre network providers, over and above direct effects that volume discounts would have on competitive position between Openreach and AltNets.

As discussed in chapter 4, AltNets such as CityFibre do not have full national coverage. In order act as an effective competitive constraint on Openreach in the wholesale market, AltNets would need to get to a substantially larger scale in terms of geographic coverage, downstream customers connected to their networks.

To achieve viable competitive scale, AltNets are reliant on long-term orders from Vodafone, OVO and other smaller providers who are

[34] ✂.

[36] ✂.

[37] As evidenced in Ofcom's investigation of Royal Mail's pricing, which lead Whistl to stop the investment. The threat of a potential price change is sufficient to alter behaviour.

willing to connect through their networks. BT is likely to continue to prefer Openreach as their supplier and Virgin uses mostly its own network. As the market continues to move from copper-based technologies to FTTC and FTTP, only two of the big four, Sky and TalkTalk, are likely to use AltNets for some of their needs.

Further, both Sky and TalkTalk need to have an ongoing relationship with Openreach to provide services nationwide. Even if the smaller retailers remain in the market in the medium term, these existing relationships increase the potential direct impacts of Openreach volume discounts on the ability of AltNets to attract traffic to their networks. As previously mentioned, the direct impacts of volume discounts on viability of AltNets can also be exacerbated depending on the design of the discount, which retroactive rebates posing the highest risks.

Finally, consolidation of the market would also increase the relative buying power of the remaining retailers, putting further pressure on AltNet ability to recover investment costs with consequent effects on their commercial viability.

Network roll-out

Consolidation of the retail broadband market and reduced network competition, as a result of wholesale volume discounts, are also likely to directly impact future FTTC and FTTP network roll-out.

As a result of their existing copper network asset, Openreach might be less ambitious in their fibre roll-out than they might otherwise be due to concerns about cannibalisation. The company is now building FTTP at a rate of c. 26,000 premises per week, up from 13,000 a year ago.[38]

The current presence and future growth of retailers such as Vodafone and OVO, who are more willing to switch between wholesale providers to AltNets, puts pressure on Openreach to improve their fibre offer in addition to providing a customer base for AltNets. This has been evidenced following the agreement between Vodafone and CityFibre in November 2017 to roll-out full fibre for 5 million premises, after which Openreach responded by increasing its 2 million premises target to 3 million[39].

Further, after CityFibre announced in April 2018 their intention to cover the city of Coventry, Openreach did the same a few months later.[40]

Therefore, a slowdown in AltNets growth, or exit from the market altogether, could reduce the pressure on Openreach to push FTTC/FTTP rollout.

Impact on end consumers

In chapter 3, the direct benefit to consumers from smaller retailers operating in the market, which amounts to c. £340 - £400 million a year, was discussed. However, consumers could be deprived of these benefits if commercial practices such as wholesale volume discounts lead to:

- Lower quality of service and/or access to retail services arising from impacts on network competition and roll-out at the wholesale level (e.g. if the market becomes more concentrated), contrary to Ofcom's stated policy objectives.
- Less innovation in the retail market, where smaller retailers are leading on innovative service offerings. For example, Vodafone was the first to abolish line rental and first to provide an ultimate broadband guarantee (consumers get a discount if Vodafone cannot deliver the promised speed). Other retailers have now followed suit.

[38] ISP Review (2020). Openreach add 227 rural UK areas to FTTP broadband rollout. Retrieved from https://www.ispreview.co.uk/index.php/2020/01/openreach-add-227-rural-uk-areas-to-fttp-broadband-rollout.html

[39] CityFibre (2018). Statement in response to Openreach FTTP announcement. Retrieved from https://www.cityfibre.com/news/statement-response-openreach-fttp-announcement/

[40] ISP Review (2018). Openreach name Coventry as next UK city for FTTP broadband. Retrieved from: https://www.ispreview.co.uk/index.php/2018/10/openreach-name-coventry-as-next-uk-city-for-fttp-broadband.html

5.2 Policy implications

The above analysis shows that in order to appropriately support the roll-out of fibre infrastructure across the UK, Ofcom should consider not only the direct impacts of its proposals on the wholesale market, but also the impacts on the retail market and consumers. In particular, it is suggested that Ofcom takes account of the interaction between wholesale and retail markets, due to feedback loops, such as the reliance of AltNets on gaining scale through supplying smaller retailers and new entrants.

Certain volume discounts, such as retroactive discounts that apply to all demand once a certain level is reached, have the potential to damage ✂ smaller retailers' market proposition, harm competition in the retail market, and result in greater levels of concentration. This can, in turn, negatively impact AltNets' plans for fibre roll-out and reduce pressure on Openreach to deploy its own network.

Recognising the threat of certain market actions in a loosely regulated market, Ofcom has proposed that any changes to commercial terms that may negatively impact competition, such as volume discounts, would have to be notified and be subject to review in a 90-day period. However, as Ofcom itself has recognised in its investigation of Royal Mail's pricing to Whistl, the threat of a potential price change is sufficient to alter behaviour, so this level of protection may not be sufficient. Therefore, it is suggested that Ofcom considers taking a stronger position on volume discounts, and other behaviour that may have a detrimental impact on retail market competition, including the possibility of their prohibition.

Appendix 1: Literature review: impact of volume discounts

Volume discounts, or rebates, are a common commercial practice that can have efficiency enhancing effects, leading to lower overall prices for downstream buyers and end consumers.

However, the European Court of Justice (ECJ) has found that a rebate scheme implemented by a dominant firm could also lead to exclusionary effects in the market even when the scheme is not formally exclusive but makes it more difficult for customers to obtain supplies from competing suppliers.[41] Rebates have therefore been scrutinised by competition authorities for their potential to prevent, restrict or distort competition.

The perceived rationale behind the use of rebates is that they provide firms with the ability to use the inelastic portion of the demand as leverage to decrease the price in the more elastic portion, thereby increasing buyers' switching costs.[42]

European competition law distinguishes between three types of rebates:

- Quantity rebates: these are linked to the volume of sales to a buyer, and the General Court considered them to be largely lawful;
- Exclusivity rebates: these are conditional on customers buying all or of some of their requirements from a dominant firm, are considered per se unlawful;
- Loyalty rebates: rebates which may have a loyalty-inducing ("lock-in") effect and may be unlawful as they restrict buyers' choice (depending upon appraisal of the specific circumstances of the case).

Quantity rebates

Quantity rebates are linked to the volume of purchase and applied to each individual order, as opposed to aggregated across multiple orders. They are generally deemed benign as they tend to reflect cost savings from higher volumes and economies of scale. Further, all buyers have access to the same discount scheme (standardised), hence lock-in effects are less likely. Quantity rebates are not the focus of this analysis so they will not be discussed further.

Exclusivity rebates

Exclusivity rebates occur when a dominant firm, which is a monopolist in one sub-market (the non-contestable part of demand) and faces competition in a second sub-market (the contestable part of demand), uses conditional discounts in which customers receive a discount on the monopoly good (the non-contestable purchases) in exchange for making all or most purchases from the monopolist. This extends the monopolist's dominance from one market into another and generates a lock-in effects, inducing buyers to purchase exclusively from a single supplier and limiting entry in the upstream market. This form of discount is ruled per se unlawful.

Cases where exclusivity rebates were ruled anticompetitive

In *Intel (2014),* The Commission found that the dominant chip-maker (with over 70% share of the global market at the time) had abused its dominant position by granting rebates to four manufacturers of computers, conditional on their purchasing all or most of their central processing units (CPUs) from Intel. The Commission also found that Intel's rebates were capable of anticompetitive foreclosure as an "as efficient" competitor would have had to

[41] *Post Danmark II (2015*). Paras 34-42.

[42] Maier-Rigaud, F. (2005) Switching Costs in Retroactive Rebates - What's Time Got to Do with it?

price its CPUs below average avoidable cost. However, this effects-based approach was considered unnecessary by the General Court, since exclusivity rebates should be deemed per se illegal.

In *Qualcomm (2018),* the Commission found that Qualcomm abused its dominant position by offering exclusivity rebates to Apple for LTE baseband chipsets.[43] Following the *Intel (2014)* judgement, the Commission did not find it necessary to perform an as efficient competitor test, and even rejected Qualcomm's, on the basis that the finding of an abuse was clear enough without any need for checking whether the conduct would pass the test.

Loyalty rebates

Loyalty rebate schemes may be ruled anticompetitive if they distort competition by restricting buyers' freedom or by barring competitors from the market.

The Commission's Guidance on Article 102 draws a distinction between loyalty rebates applicable to all sales across a referenced period ("retroactive rebates") as opposed to rebates paid only on incremental sales after a certain threshold ("incremental rebates").

Retroactive rebates have received the most attention from competition law as they have the potential to foreclose the market significantly, by making it less attractive for buyers to switch, even small amounts of demand, to competitors. Further, the length of reference period is of interest, as a relatively long one (e.g. one year), may increase the pressure on the buyer towards the end of the period to reach the threshold needed to obtain the discount or to avoid suffering the expected loss for the entire period (the "suction" effect).

Cases where loyalty rebates were ruled anticompetitive

In *Post Danmark II (2015)*,[44] retroactive rebates were found to be an abuse of dominance and distort competition in the distribution of bulk mail in Denmark. The rebate scheme was retroactive over a one-year period and standardised on a scale from 6% to 16%. The discounts were calculated at the end of the year on the actual volumes of mail sent and applied to all units. The ECJ ruled that these characteristics gave rise to lock-in and anticompetitive exclusionary effects which led Bring CityMail, Post Danmark's only rival, to exit the market.

In *British Airways (2007), the* ECJ found that the airline abused its dominant position on the market for air travel agency services.[45] BA implemented retroactive rebates based on the extent to which travel agents increased their sales of BA tickets from one year to the next. Each agent could earn an additional commission of up to 3% for international tickets and up to 1% for domestic tickets based on their performance. Rebates were also discriminatory, as travel agents providing equivalent services received different discounts.

Distortion of downstream competition

Another potential competition concern is that rebates implemented by a dominant firm may distort competition among the dominant firm's customers by creating discrimination between downstream competitors, which may

[43] Baseband chipsets enable smartphones and tablets to connect to cellular networks and are used both for voice and data transmission. During the relevant period, Qualcomm had c. 90% of the market, which was characterised by high barriers to entry due to R&D and intellectual property rights.
[44] During the relevant period, the market for the distribution of bulk mail was subject to high barriers of entry due to economies of scale, and a statutory monopoly that accounted for 70% of the market. Therefore, Post Danmark held a dominant position. The only competitor in the market was Bring CityMail, which, when active, delivered direct advertising mail in a service available to approximately 40% of the relevant households.
[45] BA's market share was significantly higher than that of its five main competitors in the United Kingdom. Hence, rival airlines were not in a position to grant travel agents the same advantages as BA.

exclude or impede the entry of certain players in the downstream market. For example, the dominant undertaking may offer large buyers a competitive advantage by providing them with a larger rebate. Even though only vertically integrated firms usually have an incentive to distort downstream competition, this can nevertheless happen in the UK fixed broadband market, as volume discounts are a good mechanism to incentivise downstream retailers to move their end customers to full fibre, thereby potentially foreclosing smaller competitors that are unable to meet the required threshold for the rebate and are left in a disadvantage vis-à-vis larger retailers. This could lead to less competition downstream and less consumer choice in the long-term.

Appendix 2: Smaller broadband providers: benefits for consumers

Smaller retailers mainly offer products in the superfast 38-63 Mbps segment of the broadband market.[46] Their main offerings are double-play bundles or other bundles excluding pay TV.[47] As evidenced in chapter 3, smaller retailers are price leaders and constrain the big four to push prices downward[48], in particular in the segments where they operate but also in other submarkets for other bundles such as triple-play and bundles including pay TV, albeit in a lesser degree.

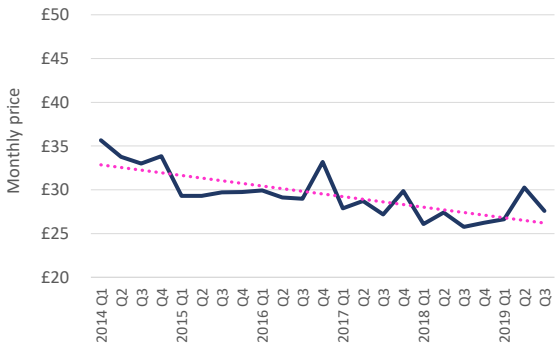
The benefits to consumers from smaller retailers operating in the market, such as lower prices and greater choice, can be grouped by type of consumer in order to estimate the overall benefit of smaller providers:

In-contract consumers:

Consumers that are in-contract (c. 59% of the total 27 million connections) are benefitting from the constraint that smaller providers exercise on larger providers' prices, especially on superfast dual-play or other superfast bundles without pay TV.

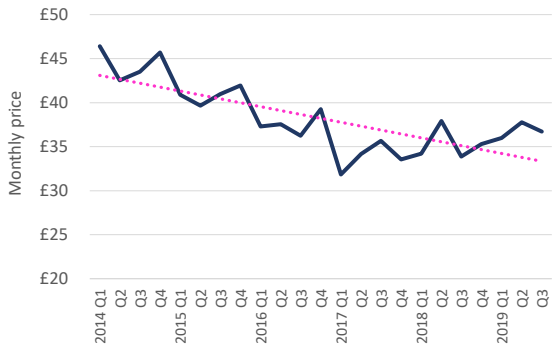
Broadband prices have followed a downward trend since the entry of smaller providers to the market.[49] In their absence, prices would most likely be higher. To quantify the benefit for in-contract consumers from smaller retailers, it is assumed that today's pricing is at the levels that existed before smaller providers positioned themselves in the market, around 2014-15. It is estimated that in-contract consumers currently benefit from c. £317.8 million a year in savings. This estimate is based on current prices being £6 higher for superfast broadband bundles, reflecting a price trend since 2014 and today (reversion to past pricing). In the absence of smaller providers, prices could have nevertheless followed a downward trend, albeit not as steep, due to other factors such as efficiencies and new technology. Therefore, an 80% reversion to past pricing affecting all in-contract customers who take dual-play bundles (broadband and fixed line) or bundles without is assumed. While smaller retailers generally do not provide triple-pay bundles (that include pay TV), a 40% reversion in pricing for these kinds of bundles is estimated.

Figure 17: Monthly prices for dual-play, superfast



Source: A&M analysis (2020). Based on Ofcom's pricing tracker (2019)

Figure 18: Monthly prices for triple-play, superfast



Source: A&M analysis (2020). Based on Ofcom's pricing report (2019)

[46] There are usually two offers for superfast, one for speeds up to 38Mbps and another for speeds up to 63 Mbps.
[47] For example, Vodafone offers a bundle of broadband (superfast 1 or 2), landline and mobile.
[48] See, for example, 6,7 and 8.
[49] ✂

Out-of-contract consumers, smaller providers:

Consumers that are out-of-contract (c. 41%) with a smaller provider, are benefiting from a lower price increase, once the contract ends, than out-of-contract customers with a larger provider. In the absence of smaller providers, smaller providers' consumers would take products from larger providers. It is estimated that these consumers currently benefit from c. £22.4 million a year. This estimate is based on a price differential of £6, reflecting the difference of out-of-contract step-up prices between smaller ✂

Out-of-contract consumers, larger providers:

Consumers that are out-of-contract (c. 41%) with a larger provider, are potentially benefitting from smaller price increases when the contract ends. This is because smaller providers are pushing the big four to keep the price increases relatively low. It is estimated that this leads to consumers benefitting from c. £59.4 million a year. This estimate is based on larger providers' step-up prices being £1 higher than they currently are.

The likelihood of the first two benefits materialising due to smaller providers being active in the market is relatively high. However, the third benefit considers that smaller providers not only influence larger providers' listed prices, but also their step-up pricing, which is less likely.

It is estimated that the combined consumer benefit of the first two effects is c. £340 million while the benefit of all three effects is as much as c. £400 million a year. As noted for the second effect, the numbers may be higher if other smaller providers' step-up pricing is similar to Vodafone's.

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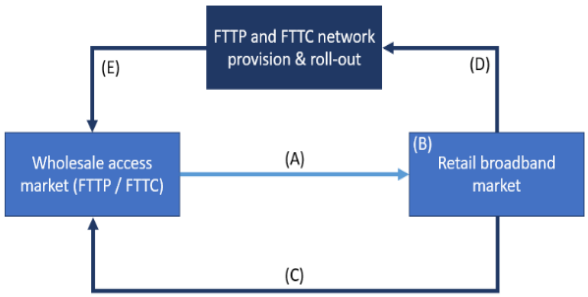
Appendix 3: Wholesale-retail feedback loops

The impact of wholesale volume discounts on retail prices, network competition and AltNet roll-out can be traced through a stylised model:

Figure 19: Stylised broadband market linkages



Source: A&M analysis (2020).

The model shows that:

A. Wholesale access is a key driver of competition in the retail market; enabling retailers to offer different products across geographies as well as, crucially, impacting the retailers' competitiveness through the wholesale prices. Volume based discounts directly influence retailers' input costs and margins, with retailers needing to decide whether to pass on any savings or price increases to consumers.

B. Retail prices drive volumes and market share. Smaller providers and new entrants, in particular, need to overcome additional hurdles of costly new customer acquisition to grow their volumes and market share, in order to reach minimum efficient scale.

C. Feedback loops, such as the impact of volume discounts on the wholesale access market, will take time to have an effect. Under volume discounts, for example, feedback from an initial loss of market share of small providers can lead to an increase in their wholesale cost, further favouring larger providers.

D. Retail market shares and the future success of smaller retailers and new

entrants affect the viability of AltNet providers, through:

- Volume of traffic. AltNets require sufficient scale to act as an effective competitive constraint on Openreach in FTTC and FTTP network provision. Much of the broadband customer base is already closed off to the AltNets, as BT is likely to use only Openreach and Virgin its own cable network (aside from a subset of new customers). Further, availability of volume discounts on the Openreach network would likely reduce AltNets' ability to attract Sky and TalkTalk wholesale demand. If the retail market stabilises around the current big four broadband providers, prospective network builders such as CityFibre are more likely to face a limited demand.
- Increased buyer power of the providers in a more concentrated retail broadband market reducing wholesale margins needed for making a risky investment.

E. Changes in competitiveness of network market and rollout of fibre have will feedback into further wholesale and retail market effects.

Ofcom's WFTMR consultation does not take full account of the impact of these linkages, particularly that allowing freedom to implement volume based discounts may discourage AltNet roll-out and decrease competition in fibre network provision.