

Robert Kenny & Brian Williamson

**The importance of differential pricing for
good consumer outcomes in telecoms**

May 2019

About the authors

Rob Kenny has extensive experience on issues of broadband policy and regulation, and has undertaken numerous projects in this area for clients such as BT, Liberty Global, Virgin Media, Vodafone, the Broadband Stakeholder Group, Ofcom and the Australian Government. He was also an advisor to Malcolm Turnbull, then Australia's Minister for Communications. He is an author of a prize-winning academic paper challenging subsidies for superfast broadband. Previously he headed strategic planning for Hongkong Telecom, and corporate development for Level 3.

Brian Williamson has extensive policy and strategy experience in relation to connectivity, radio spectrum and the internet. Brian has worked for governments, regulators, vendors, telecommunications operators and global internet companies on the benefits of, and policy in relation to connectivity, platforms and apps. Brian jointly originated the concept of 'equivalence' applied to Openreach and developed the concept of 'anchor product regulation' which has been applied in the UK and New Zealand and was incorporated into the 2013 European Commission recommendation on non-discrimination and costing methodologies.

Disclaimer

This is an independent report commissioned by BT, Sky, Telefónica, Virgin Media and Vodafone (CPs).

The opinions offered in this report are purely those of the authors. They do not necessarily represent the views of the CPs, nor do they represent a corporate opinion of Communications Chambers.

Contents

1. Executive summary.....	2
Government’s goals for the telecommunications sector	2
The UK telecoms sector delivers extraordinary gains in value for money	2
Telecoms differs from utilities in policy-relevant respects	3
Price differentiation for telecoms is both efficient and fair	3
2. Positive outcomes for consumers.....	4
Adoption and use	5
Network service availability and take-up	7
Price	8
The telecoms paradox – exceptional gains in value for money coupled with dissatisfaction	10
3. Features that differentiate telecoms from utilities.....	12
Heterogeneity	13
Price differentiation	13
Transition to more advanced services	13
Competition	14
Policy relevance of differences	15
4. The benefits of differentiated pricing.....	16
Definition	16
A very common aspect of markets	16
Benefits of price differentiation	18
The economic literature on differentiated pricing	19
Price differentiation in UK telecoms	21
Price differentiation and fairness	25
Conclusion	27

1. Executive summary

The purpose of this paper is to consider outcomes in the telecommunications sector and their relationship to price differentiation, including loyalty discounts. In addressing this question, the paper also compares and contrasts telecoms with utilities such as water and electricity distribution.

This paper is prompted by the growing regulatory and policy focus on consumer outcomes related to customer service, fairness, investment and affordability, in particular the Consumer Green paper by the Department for Business, Energy and Industrial Strategy in April 2018; the Competition and Markets Authority paper ‘Tackling the loyalty penalty’ of December 2018; the review of regulation of essential services by the National Infrastructure Commission (NIC) expected to report in Autumn 2019 and ongoing work by Ofcom in relation to consumer issues.

Government’s goals for the telecommunications sector

Ofcom has a key role in addressing competition and consumer issues in telecommunications; whilst the Department for Digital, Culture, Media and Sport set out priorities in their Statement of Strategic Priorities consultation for telecoms in February 2019:

“The Government’s aim is to promote effective competition and investment in world-class digital networks. Investment in new networks is key to improving consumer outcomes, in terms of choice, service quality, and innovation. It is the Government’s view that promoting investment should be prioritised over interventions to further reduce retail prices in the near term.” Paragraph 20.

We explore three interrelated issues in the context of the above: outcomes in the telecoms sector; differences between telecommunications and utilities; and the role of service-price differentiation in supporting good outcomes.

The UK telecoms sector delivers extraordinary gains in value for money

Outcomes in the UK telecoms sector, both relative to other European countries and in terms of progress, are good; with exceptional growth in value for money (a priority should be developing and reporting metrics that better capture gains in value for money for telecoms in quality and quantity adjusted terms by Ofcom and the Office for National Statistics).

However, and paradoxically, whilst investment, transition and adoption are the drivers of exceptional gains in terms of value for money, they are also sources of consumer – and political – disquiet. Transition, for example, may involve ‘costs’ for consumers and an ongoing gap between haves and have nots – where new networks are available versus where they are not; and of adoption with older and disadvantaged consumers tending to be late adopters.

Telecoms differs from utilities in policy-relevant respects

Whilst it is a policy goal to ensure universal coverage for basic broadband and improved mobile data coverage, unlike energy and water, telecoms networks offer a range of services that are neither universally available nor universally adopted.

Unlike energy and water, there are multiple mobile, fixed and satellite telecoms access networks; and an ongoing transition with overlapping generations of technology (2G, 3G, 4G and prospectively 5G; copper, hybrid copper & fibre, and ‘full fibre’).

Investment in expanding coverage, in more capable technologies, transition and adoption are policy priorities for telecoms. Telecoms network services are differentiated and priced in ways that support these objectives, in addition to supporting competition.

Price differentiation for telecoms is both efficient *and* fair

Not only is price differentiation efficient in furthering investment and adoption for telecoms, it is also arguably fair. Those who pay more tend to be those who are better off. Conversely, those who pay less are switchers and new users, thereby supporting both competition and adoption. The initial discounts help overcome switching and adoption costs, and behavioural inertia.

It is reasonable to consider whether pricing is aligned with both efficiency and fairness, and to discourage conduct that harms vulnerable customers. However, it is important to allow differentiation that benefits investment and customers, and in particular benefits those disadvantaged groups who are late adopters.

2. Positive outcomes for consumers

Telecoms markets in the UK have delivered extraordinary outcomes and rates of improvement for consumers. Adoption and use of telecoms services and network dependent applications is also high in comparative terms, though far from universal, particularly amongst the elderly.

These improvements in telecoms differ in character from developments in utilities such as water and electricity distribution which are comparatively static (though water quality has improved) and already near universally available and adopted. The policy-relevant differences between telecoms and utilities such as electricity and water are considered in Section 3.

Fixed and mobile networks have transitioned from voice to data, coupled with enormous increases in capacity and quality, in particular, in relation to speed; whilst Wi-Fi has greatly increased the utility of fixed broadband. Widespread adoption of mobile data has delivered broadband on the go, and alongside fixed broadband has increased resilience, assessed on a multinet network basis.

This has been achieved with more or less constant bills, and therefore rapidly falling prices in quality adjusted terms (though telecoms prices, as opposed to bills, are not in general measured and reported in a way that reflects the transition to data and therefore more recent underlying progress on a unit price basis).

The market has been, and remains, in constant transition driven by investment in new technology (VDSL, Cable DOCSIS, more fibre and successive G's in mobile). Coverage of services has grown, access speeds have increased and unit costs per unit of data carried have fallen dramatically.

Once a single-network offering a single-service (voice), telecoms is now a multi-network multi-service market with heterogeneous service levels and price points (including non-cost price differentiation). In this respect, the telecoms market is now a more 'normal' market versus utilities such as water or electricity distribution, a distinction explored in the following section.

An exception to the shift towards 'market normality' is consumer and/or political expectations that a basic level of service should be universally available. Whilst the market alone continues to make progress, joint effort with government is required to deploy

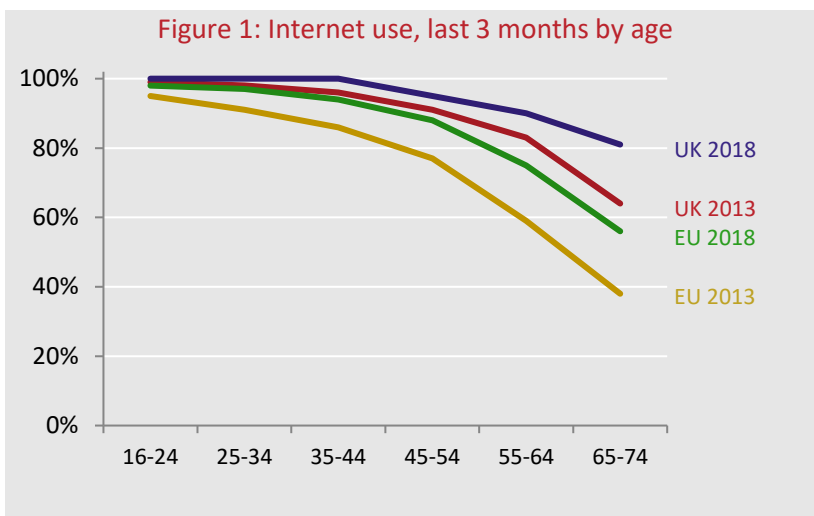
broadband and mobile data services in non-commercially attractive areas.

Adoption and use

The best measures of internet outcomes for consumers are adoption and use, including of network dependent applications, and the UK scores well on these.

Internet use

Internet use, irrespective of means of access, is an overall indicator of progress and comparative outcomes. Figure 1 shows Eurostat data for individual internet use in the last year months by age for the EU-28 and UK in 2013 and 2018.¹



Internet use in the UK is now universal for those aged 16-44 and has grown significantly over the past five years for those aged 45 and over. UK non-use for those aged 65-74 almost halved from 2013 to 2018, falling from 36% to 19% (nevertheless leaving a sizeable group who still do not use the internet). Outcomes in the UK compare favourably with the EU.

Device adoption

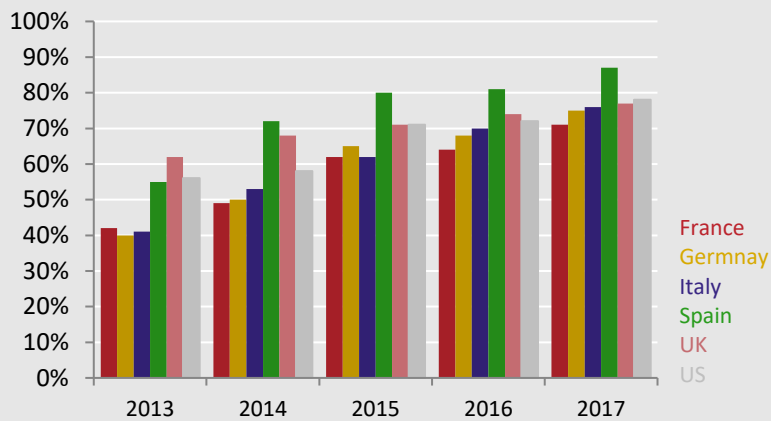
The key device in terms of online applications is currently the smartphone, having overtaken the PC and also supporting myriad applications not feasible on a PC, such as Uber (applications such as word processing are still predominantly carried out on PCs).

The UK has seen rapid smartphone adoption second only to Spain amongst the EU-5 and similar to the US as shown in Figure 2.²

¹ Eurostat, [Internet use by individuals](#), accessed 18 April 2019.

² Google, [Consumer Barometer](#). Accessed 17 April 2019.

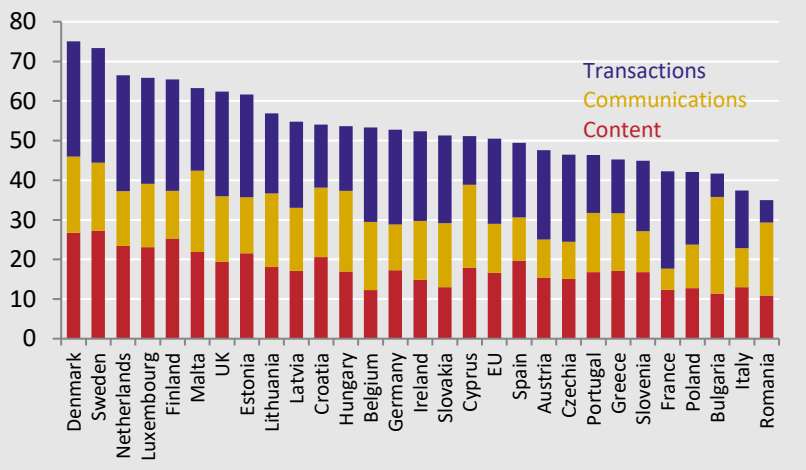
Figure 2: Smartphone adoption



Applications use

The UK ranks 7th in the EU-28 in terms of use of internet services ranked according to the European DESI index (figure 3).³

Figure 3: Use of internet services, 2018



In relation to e-commerce, UK online sales were 18% of overall retail sales in 2018, versus 4.9% a decade ago.⁴ The UK is a leading e-commerce market with almost double the level of online sales versus the US⁵, France or Germany.⁶

Data consumption

Mobile and fixed data consumption reflects price, quality and developments in the applications market (particularly on-demand video). Based on the 2017 Ofcom International Communications

³ European Commission, *Digital scoreboard*, 2018.

⁴ Office for National Statistics, *Internet sales as a percentage of total retail sales*, accessed 18 April 2019.

⁵ US Department of Commerce, *Quarterly retail e-commerce sales - 4th quarter 2018*, March 2019.

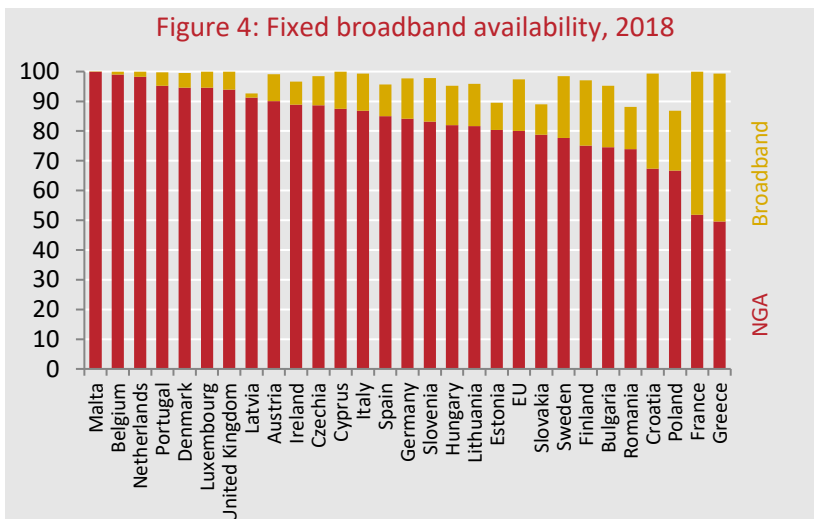
⁶ Ecommerce News Europe, *Ecommerce in Europe was worth €534 billion in 2017*, July 2018.

Market Report⁷, average monthly fixed data use per capita was more than double that in all other EU-5 countries and exceeded that in all other comparator countries with the exception of Korea; whilst average monthly mobile data use per capita exceeded that in all other EU-5 countries, but was significantly less than that in a number of other comparator countries including the US.

Network service availability and take-up

Fixed

Figure 4 shows that the UK ranks 7th in Europe in terms of next generation access availability (the rank for fibre to the premise is low as VDSL and DOCSIS upgrades were initially prioritised to deliver a rapid increase in the NGA footprint).⁸



The UK also ranks 4th in terms of household broadband adoption.

Mobile

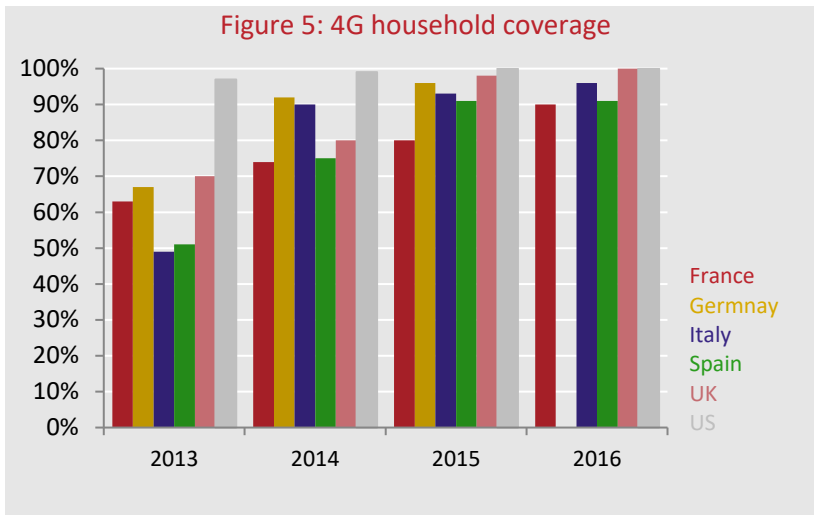
Mobile coverage is dependent on the measure.⁹ Based on internationally comparable EC data (based on ITU data) on 4G household coverage the UK had better coverage than that in other EU-5 countries in 2016, but along with other EU-5 countries has lagged the US in 4G coverage (figure 5 - note that a comparable data point for Germany was not available for 2016).¹⁰

⁷ Ofcom, [International Communications Market Report 2017](#), December 2018.

⁸ European Commission, [Digital scoreboard](#), 2018.

⁹ For example, Ofcom adopted a stricter application-based basis for determining coverage from 2017. Ofcom, [Connected Nations 2017](#), December 2017. Paragraph 3.3.

¹⁰ European Commission, [International Digital Economy and Society Index 2018](#), October 2018.



This is somewhat at variance, for example, with a report by the National Infrastructure Commission that described mobile coverage in the UK as ‘deplorable’.¹¹ However, this conclusion drew on crowd sourced data with the NIC noting:

“We note caution should be used in inferring coverage from OpenSignal’s availability metric. It includes other factors – accounting for indoor connections and times of high congestion. Countries in the earlier stages of their 4G deployments can sometimes have higher availability scores as the numbers of 4G subscribers are typically small and confined to large urban areas where new 4G networks are typically located.”¹²

The UK initially lagged in deploying 4G because of delays in liberalising 1,800 MHz spectrum for 4G use, and because the UK initially followed a non-harmonised plan for 800 MHz release which had to be reworked in line with the agreed EU approach.¹³ Network operators rapidly expanded 4G coverage once spectrum was available.

Price

Measures of price, particularly in relation to mobile, tend to reflect average bills rather than a price per unit of consumption of data. For fixed broadband service quality has improved appreciably (capacity, speed, improved Wi-Fi and service offers which include mobile data as

¹¹ National Infrastructure Commission, *Urgent plan needed to tackle ‘deplorable’ mobile services*, December 2017.

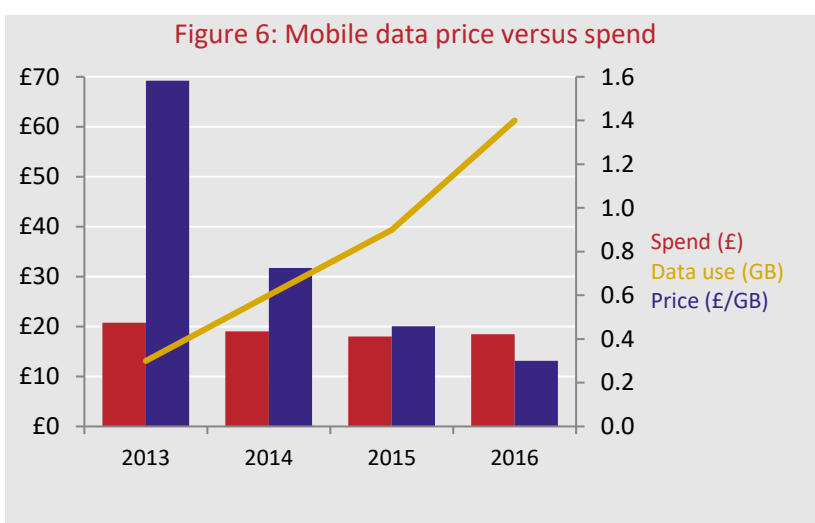
¹² National Infrastructure Commission, *Connected Future Report*, December 2016.

¹³ Aetha, *Case studies for the award of the 700MHz/800MHz band: UK*, November 2011.

a back-up). Quality adjusted prices should be reported alongside bills (one possible proxy would be the log of speed¹⁴).

Ofcom¹⁵ and the European Commission¹⁶ report mobile ‘prices’ based on average weighted bills. Yet, as mobile packages, behavior and spend have shifted to data and away from voice and SMS services (which are increasingly free/unlimited in any case), the price per GB of data is arguably the appropriate measure. Whilst bills may be more or less constant, these mask a rapid price per GB decline coupled with growing data consumption (stimulated, in large part, by the price decline).¹⁷

The difference between spend (proxied by the weighted average monthly ‘price’) and the effective price per GB used is shown in Figure 6 for the UK, alongside monthly data use per handset (right hand scale).¹⁸



Expenditure on bills has remained roughly constant whilst the price of mobile data (per GB) has fallen dramatically. Even this understates the gain for consumers, since there have been a number of ‘ancillary’ improvements, such as bundled content (such as Spotify, Apple Music and Netflix), inclusion of unlimited texts and voice, and so on.

Similarly, fixed broadband customers are receiving ever more bandwidth and traffic for roughly flat monthly bills.

Unit price and quality adjusted price metrics should be developed and reported by Ofcom and the Office for National Statistics as they better reflect productivity growth and consumer gains than current measures

¹⁴ Which may roughly proxy incremental willingness to pay for increased speed, at least up to the threshold beyond which most consumers would place little if any value on higher access speeds (particularly when account is taken of end-to-end Wi-Fi router and device constraints).

¹⁵ Ofcom, *Pricing trends for communications services in the UK*, May 2018.

¹⁶ European Commission, *Mobile Broadband Prices in Europe 2017*.

¹⁷ Williamson, *The price of telecoms – getting it right – why it matters*, 2018.

¹⁸ Ofcom, *Pricing trends for communications services in the UK*, May 2018. Based on Ofcom Figure 4 data.

based on bills and service bundles (the Office for National Statistics is considering this issue¹⁹).

The telecoms paradox – exceptional gains in value for money coupled with dissatisfaction

Connectivity is valued by consumers and delivers productivity benefits throughout the economy. We have also discussed how, on comparative terms and in terms of progress, a range of indicators of the health of the telecoms sector in the UK paint a positive picture. Yet the telecommunications sector was identified in the Green Paper on Modernising Consumer Markets as a sector with relatively weak performance in relation to customer service.²⁰

“The Institute for Customer Service ranks energy, water and telecoms among the weakest performing markets for customer service.”

The Consumer Green Paper cites the EC scorecard and Institute for Customer Service (ICS), both of which have subsequently been updated with the EC scorecard updated based on a 2017 survey (previously 2015) and the ICS index updated from 2017 to 2018.²¹

Since the EC scorecard is more transparent (the ICS service is proprietary with detailed sector specific data behind a paywall) and provides a cross country comparison, we focus on this EC scorecard.

Telecoms scores 77.3, just below the average for all services of 78.7 (goods markets typically score more highly than services markets with an average score of 82.7). We also note that overall the variation in scores across activities is relatively modest. Whilst the scoring range for each scored element of service is from 0-10, overall scores range from a top score of 85.3 for Spectacles and Lenses to a low of 73.1 for Real Estate Services.

Further, cross sector comparisons need to be interpreted with care with, for example, huge variations in terms of the necessary level and nature of customer interaction with suppliers, the underlying risk of problems arising and the extent of supplier control over service quality (for example, fixed broadband providers have limited control over in-home Wi-Fi quality, and customers may attribute poor speed

¹⁹ Office for National Statistics, [Measuring output in the Information Communication and Telecommunications industries: 2016](#); Heys (Office for National Statistics), [Measuring the digital economy: Is history about to be rewritten?](#) January 2018

²⁰ Department for Business, [Energy and Industrial Strategy \(BEIS\), Modernising Consumer Markets – Consumer Green Paper](#), 2018.

²¹ European Commission, [Consumer Markets Scoreboard: making markets work for consumers - 2018 edition](#), October 2018. The Institute of Customer Service, [The UK Customer Satisfaction Index](#), January 2019.

or outages to fixed access rather than the wireless tail). Some of the differences between telecoms and utilities are discussed in the following section.

Rapid and ongoing improvements in relation to telecommunications services have benefited customers and the economy as a whole, but transition from one network technology to another (upgrades but also switching) may involve ‘disruption’ for consumers e.g. having to replace a device or be at home for a fibre installation. There are also inevitable transition periods in which there are haves and have nots, and potentially enduring difference in service levels by location (for example, high-speed millimetre band 5G is unlikely to be universally available, possibly ever²²).

There are therefore transition related complaints and dissatisfaction, which may become a focus for political dissatisfaction. That is the glass half empty story. The glass half full counterpart is enormous and ongoing declines in the unit price of telecoms services (discussed earlier), increases in value for money and consumer surplus and an ongoing contribution to productivity growth throughout the economy.

Studies indicate the benefits are large, for example, in relation to consumer surplus. Rennhoff and Routon (2016)²³ estimate substantial consumer surplus gains from smartphones and data connectivity in the US whilst Goodridge *et al* (2014)²⁴ estimate substantial productivity benefits for the UK from improvements in connectivity and Byrne and Corrado (2017)²⁵ estimate the benefits of cloud services – which are linked to connectivity.

Telecoms may therefore illustrate a paradox of change, namely that those sectors undergoing the most rapid transformation, particularly where new services cannot be made available to all at once and transition involves some disruption, may produce some of the greatest benefit for consumers and the economy overall whilst also involving a degree of ongoing consumer and political dissatisfaction.

²² The Verge, [Verizon and T-Mobile agree much of the US won't see the fast version of 5G](#), April 2019.

²³ Rennhoff and Routon, Can you hear me now? The rise of smartphones and their welfare effects, *Telecommunications Policy*, Volume 40, 2016.

²⁴ Goodridge, Haskel and Wallis, *The “C” in ICT: communications capital, spillovers and UK growth*, November 2014.

²⁵ Byrne and Corrado, [ICT Services and their Prices: What do they tell us about Productivity and Technology?](#) September 2017.

3. Features that differentiate telecoms from utilities

Telecoms is at times compared with regulated utilities including water and electricity distribution, and the National Infrastructure Commission have been tasked with reviewing the framework for regulation of these sectors.²⁶ Broadband is also seen by many as ‘essential’, alongside with housing, food and utilities such as water and electricity.²⁷

Whilst fixed and mobile internet access is becoming increasingly important to the economy, these services are neither universally available nor universally adopted, unlike water and electricity. Further, provision of telecoms services is competitive, with a wide range of service levels and offers available.

Telecommunications access therefore differs from water and electricity distribution, and these differences matter both in terms of policy priorities and in terms of the scope for and implications of price differentiation (considered in section 4). In this section we focus on features of telecoms that differentiate it from utilities and which are relevant for policy.

As Ofcom noted during the 2015 Strategic Review of Digital Communications:²⁸

“the communications sector is different to utilities. The communications sector is characterised by continual evolution in technologies and service capabilities, matching changes in demand and differentiated willingness to pay for different features.”

Telecommunication’s differences from utilities are important in assessing and comparing outcomes and deciding what should be regulated and how. In contrast to utilities such as water and electricity distribution, telecoms markets are characterised by:

- Heterogeneity
- Differentiation
- Transition to more advanced services
- Competition

²⁶ National Infrastructure Commission, [Commission seeks views on future improvements to regulating essential services](#), February 2019.

²⁷ Which, [Broadband now seen as one of top five modern day essentials](#), December 2016.

²⁸ Ofcom, [Strategic Review of Digital Communications: Discussion document](#), July 2015.

Heterogeneity

Telecommunications services are heterogenous, it is not a one-size-fits-all market. There are multiple networks and network technologies (fixed, mobile and satellite; mobile 2G/3G/4G; fixed copper/fibre and hybrids etc) and applications (integrated voice, SMS and data; millions of third-party apps).

This is unlike water or electricity distribution where the service is homogenous. Electricity is 240 Volts and 50 Hz, and consumers do not have a choice regarding water pressure or quality²⁹. Demand for connections is relatively price insensitive.

Further, no single telecoms network or service enjoys universal adoption and use. Not all consumers have fixed or mobile connectivity of any kind, and uptake is even lower for more recent technologies and services including mobile data and fibre to the cabinet or premise. Demand tends to be price sensitive, particularly for more recent and advanced services.

Access networks are not the only driver of differences in customer experience. Core network capacity, the distance to and extent of local caches for application software; and in-home networks all matter too. Further, consumers experiencing a fault may not know where in this chain the problem lies, meaning network operators may be blamed for faults beyond their control. This distinguishes telecoms from utilities such as electricity and water distribution. (Consumers are well aware if there is a leak in their in-home water distribution).

Price differentiation

In telecoms heterogeneity is coupled with service-price differentiation which is not necessarily simply reflective of underlying capabilities and costs. This is not the case for utilities such as water and electricity distribution where prices may differ by region, but customers do not have choices in terms of network services and prices. The nature and value of such differentiation is considered in Section 4.

Transition to more advanced services

Telecoms networks and services are characterised by transition from one technology to the next, periods of parallel service provision and ultimately network retirement. Whilst, for example, water

²⁹ Pressure and quality may differ by location, but not in a way over which consumers can exercise choice in terms of supply. Consumers may, however, filter their water or boost the pressure.

distribution may transition from cast iron to plastic pipes, networks do not run in parallel, consumers do not have a choice and co-ordinated retirement of technology generations is not required.

Fixed telecoms networks have transitioned from voice only to accommodate dial-up internet access (though not the two services simultaneously), to Cable DOCSIS and DSL broadband and Wi-Fi from around 2000 to higher speed networks incorporating fibre closer to the premise with copper and wireless tails (VDSL, G.fast, fibre to 5G and fibre to the premise – all with Wi-Fi tails).

Mobile networks have transitioned from voice to data, and through generations (2G, 3G, 4G and now 5G which may run in parallel or see eventual retirement). Parallel running costs, and the lock-in of spectrum for previous generations of technology are involved, and retirement may see the end of support for legacy business and consumer services and devices (for example, in Australia 2G networks were shut down in 2017, and analogue mobile is now long gone across the world).

Competition

In contrast to water and electricity³⁰ distribution, there clearly is competition in relation to network access (particularly for mobile access, but increasingly for fixed also), and substantial competition in relation to communications applications when account is taken of internet-based services and apps.

Competition has increased with the upgrade of cable networks which compete with telco broadband access, new entrant fibre network build, and 4G (prospectively 5G) wireless access coupled with a pivot to increased reliance on mobile devices (9% of households in the UK had mobile internet access and no broadband access at home in 2017³¹). Low earth orbit satellite constellations, as proposed by OneWeb³² and SpaceX³³, may also provide an additional source of competition in future.

³⁰ Local storage and generation may change this for electricity distribution, though at the very least the network provides a valued source of back-up for almost all consumers.

³¹ European Commission, *E-Communications and Digital Single Market, Eurobarometer 462*, Published July 2018, fieldwork April 2017. Page 53.

³² FT, *SoftBank and Virgin-backed satellite group finally nears take off*, January 2019.

³³ Ars Technica, *FCC tells SpaceX it can deploy up to 11,943 broadband satellites*, November 2018.

Yet an assessment by the Social Market Foundation claimed that:³⁴

“In telecommunications, market concentration is high and it has increased over the past decade with respect to broadband and mobile telephony”

The study also estimated higher concentration indices (HHI) for broadband and mobile than for electricity or gas. The flaw in this analysis is a failure to consider different layers of competition including networks and applications in addition to retail services. In telecommunications there is considerable network competition, whilst in electricity and gas there is none.

Policy relevance of differences

Telecoms markets are heterogenous, with service-price differentiation, network transition (including parallel running, customer transition and service retirement) and with application-based competition and varying degrees infrastructure-based competition – depending on location.

Telecoms is therefore different from utilities in ways that matter materially for the evaluation and comparison of outcomes, and in terms of the need for, challenges in applying and appropriate nature of regulation.

In particular, price differentiation – including discounts for those who switch provider or are new adoptees – can be expected to have particular value in relation to telecommunications since there is more scope for differentiation than there is with utility services, and since adoption is necessary to support investment and is not guaranteed i.e. adoption is price sensitive and may be subject to behavioural inertia. The following section considers price differentiation in telecoms, including its efficiency and fairness.

³⁴ Social Market Foundation, [Competition, not Concentration - Creating Better Consumer Markets](#), July 2018.

4. The benefits of differentiated pricing

Definition

Price differentiation - also known as price discrimination - is the practice of a firm charging a different price to different customers, for reasons unrelated to cost.

Economists identify three different types of price differentiation:

- *First degree*: Each individual consumer is charged a different price (at least technically possible for e-commerce)
- *Second degree*: A firm provides bulk discounts or uses ancillary product features so that consumers with higher willingness-to-pay identify themselves (eg higher charges for higher bandwidth)
- *Third degree*: A firm charges different prices to different segments of customer (eg consumer vs business)

First degree price differentiation has attracted considerable interest in recent years, since the rise of e-commerce has made it more plausible (at least theoretically). However, to our knowledge it has been deployed little if at all within UK telecoms firms, and so we set it aside for the purposes of this paper. (This form of price discrimination is used by telecoms regulators however – a spectrum auction elicits the willingness-to-pay of each operator, and sells the spectrum to the one with the highest WTP).

Price differentiation is not directly related to the cost of the product(s) in question. They may be identical or very similar across the offers. Rather, the price differentiation is primarily driven by the willingness-to-pay of the different customer segments. Those who are likely to value the product most highly are charged more, and those who value it less are charged less. (Of course, no firm has perfect knowledge of its customers, so this targeting is at best approximate).

A very common aspect of markets

Price differentiation is very widespread, and examples are to be found in virtually every corner of the economy. It certainly is not limited to situations where firms have market power.

As the FCA has noted:

“Price discrimination is a practice that is common in many markets ... We regularly find different consumers paying different prices for the same product in our daily life.”³⁵

According to the OECD:

“Some form of price discrimination is used in the vast majority of markets, it is frequently used by firms with little market power, and discrimination often makes markets more competitive.”³⁶

Figure 7 shows a small sample of price differentiation from an array of markets, including many which are highly competitive:

<i>Market</i>	<i>Pricing strategy</i>
Airlines	Lower prices for round trips originating in lower income countries
Airlines	Discount for weekend stays (to identify non-business travellers)
Railways	Discount for advance purchase (as above)
Text books	Lower price in lower income countries
Consumer books	Expensive hard-backs (a premium for those WTP to read immediately)
Pharmaceuticals	Lower price in lower income countries
Retailers	Student discounts; discount coupons
Restaurants	Early-bird specials
Conferences	Discounts for attendees from non-profits
Theatres	Cheap standby tickets
Cinema	Cheap tickets for children
Satellite TV	Higher prices for bars vs home user (within which, lower prices for bars in areas of low population density)
Productivity software	Lower prices for home users
Academic journals	Lower prices for universities, higher for corporates
Various	Armed forces and senior discounts

We turn later to a discussion of the price differentiation and fairness. However, there are numerous examples of price differentiation - such as those above – that attract no complaints regarding their fairness. Thus consumers clearly do not believe that differentiation is inherently unfair.

³⁵ FCA, [Price discrimination in financial services - How should we deal with questions of fairness?](#), July 2018

³⁶ OECD, [Price Discrimination -- Background note by the Secretariat](#), 13 October 2016

Benefits of price differentiation

Price differentiation is so common because it has significant advantages for producers – it can both grow the market and/or increasing overall revenues. These advantages are not necessarily at consumers' expense. For example, price differentiation may mean that consumers with a lower willingness to pay are offered a price that is attractive to them, and thus are able use the product and generate consumer surplus.

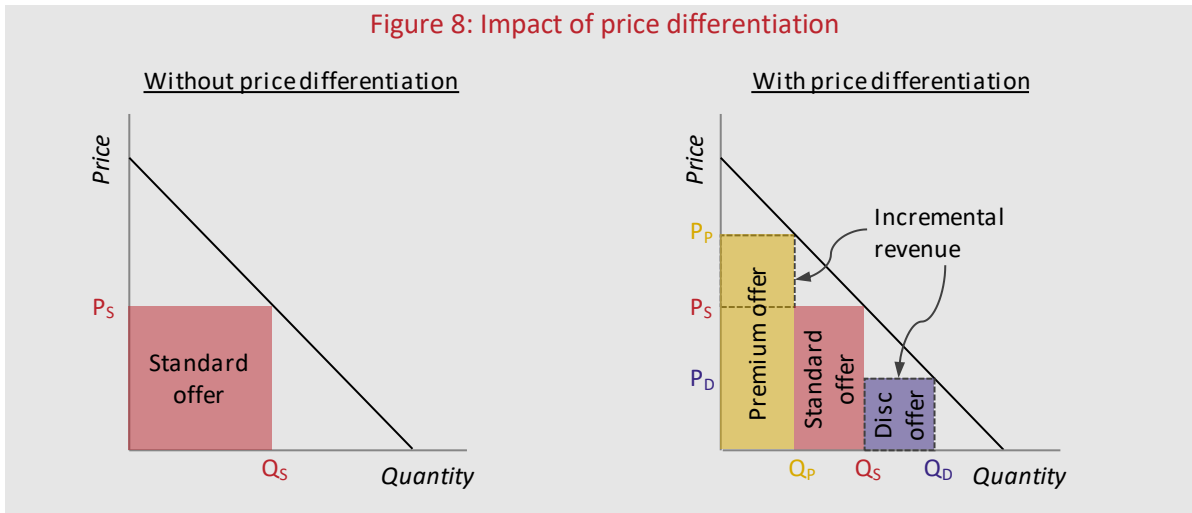


Figure 8 illustrates this. Without price differentiation, consumers who value the product at less than P_S will not buy the product. However, if there is a discounted offer (with price P_D) then customers who value the product at above P_D but below P_S become additional buyers.

There is a further important potential benefit of price differentiation. For businesses with substantial fixed costs (such as telecoms), any incremental revenue can make a significant difference to investment returns. Crucially, for investments that are marginal – that is, close to the investor's threshold rate of return – the incremental revenue can make the difference between an investment going ahead or not. (That is, price differentiation has dynamic benefits).

In this case, the benefit of price differentiation is not just that the low willingness to pay customers enjoy the product – rather, price differentiation is essential for *any* customer to enjoy the product. Even high willingness to pay customers will not get to use the product if the investment never proceeds. In such a scenario, these high WTP customers benefit from price differentiation, *even though they are being asked to pay more in this scenario*.

The economic literature on differentiated pricing

Theoretical analysis

Price differentiation has been widely studied, and within this the question of whether it is likely to harm or benefit consumers. According to the OECD:

“Price discrimination can be harmful if it is costly to impose and reduces consumer surplus in the short run without a sufficient compensating effect. Such compensating effects might include expanding the market, intensifying competition, preventing commitment to maintain high prices, or incentivising innovation.”³⁷

In general, the presence of competition and high fixed costs (i.e. the circumstances of UK telecoms) point to price differentiation being beneficial rather than harmful.

Prof Hal Varian highlights the importance of price differentiation in supporting investment in fixed cost businesses:

“Consider, for example a case with two consumers one of whom would pay \$20 for a telecommunications service, and the other of whom would pay \$5. For simplicity, assume that the marginal cost of providing the service is zero. If the firm supplying the service is required to sell at a uniform rate to both consumers, it would clearly find it most profitable to set a rate of \$20 ...

[However] if we assume that there is also a fixed cost of production of \$25 ... there is *no* uniform price at which the firm can recover its costs. The only economically viable solution is for the firm to charge each user according to his or her willingness to pay. If there are large fixed costs, and low marginal costs, differential pricing may be required for a producer to be economically viable.”³⁸

This potential for differential pricing to support greater and wider investment is particularly relevant given the need to fund 5G and FTTH (though this would not justify unfair pricing).

The OFT, in analysing price differentiation, reached

“a relatively strong conclusion regarding price discrimination with competition: it is at worst neutral, and at best positive.”

³⁷ OECD, *Executive Summary of the Roundtable on Price Discrimination*, 9 February 2018

³⁸ Prof Hal Varian, “[Differential pricing and efficiency](#)”, *First Monday*, 5 August 1996

(The OFT did note some potential exceptions, such as markets with unsophisticated consumers).

Similarly, Dr Papandropolous (of DG Comp) has written:

“consumers may more often than not benefit from price discrimination in competitive markets”³⁹

Empirical evidence

The view that price differentiation can be positive for consumers is not simply theoretical. It has been demonstrated in industries as diverse as bricks, coronary stents, breakfast cereal, hotel-casinos, petrol and cinemas.⁴⁰

In telecoms, the impact of tariff diversity in broadband has been studied by Justus Haucap, Ulrich Heimeshoff, and Mirjam R. J. Lange of the Düsseldorf Institute for Competition Economics. They found:

“tariff diversity ... significantly enhances demand. ... The possibility of price discrimination seems, as suggested by traditional economic theory, to enlarge output and demand by serving consumers with a low willingness-to-pay ... [I]ncreased tariff diversity [is] a more important channel of fixed broadband adoption than increased inter-platform competition. As a policy matter, these results suggest that policy makers should be lenient towards price discrimination in broadband markets”.⁴¹

Views of telecoms regulators

It is for such reasons that telecoms regulators have recognised the potential for price differentiation in this market to be beneficial:

³⁹ Dr. Penelope Papandropoulos, [“How should price discrimination be dealt with by competition authorities?”](#), *Concurrences*, 3-2007

⁴⁰ For a detailed discussion, see OECD, [Price Discrimination -- Background note by the Secretariat](#), 13 October 2016

⁴¹ Justus Haucap, Ulrich Heimeshoff & Mirjam R. J. Lange, [The Impact of Tariff Diversity on Broadband Diffusion – An Empirical Analysis](#), DICE Discussion Paper, August 2014

Figure 1 Sample telecoms regulator comments on price differentiation

Regulator	Comment
Ofcom	“Price differentiation...[could] allow investments to take place that would, with a single price, not be possible. This is unlikely to be possible under a flat rate pricing system (such as cost based pricing).” ⁴²
European Commission	[P]ricing flexibility at wholesale level is necessary to allow both the access seeker and the SMP operator’s retail business to introduce price differentiation on the retail broadband market in order to better address consumer preferences and foster penetration of very high-speed broadband services.” ⁴³
Monopol-kommission [Germany]	“Price differentiation often has a welfare-enhancing effect. In particular, the welfare effects are positive overall if demand increases as a consequence”. ⁴⁴ [In the context of ISPs]

Price differentiation in UK telecoms

Price differentiation has existed in many forms in UK telecoms for many years, without generating particular concern. To take one example, many broadband products are differentiated on the basis of speed. However, the cost difference of different speeds (on a given network) is generally trivial.⁴⁵ The price difference for (say) a 50 Mbps vs a 100 Mbps product on an FTTP network is designed to capture different willingness-to-pay, not to reflect different costs. Speed-based differentiation is beneficial for elderly consumers who typically live in smaller households, and therefore have lesser need for bandwidth.

A second example is pay-as-you-go vs pay monthly for mobile. This form of price differentiation creates clear value for consumers. Those able to make a long term financial commitment can enjoy lower prices, while those on uncertain income (such as those on zero-hour contracts) can nonetheless use mobile service without fear of being locked into an unpayable monthly bill.

⁴² Ofcom, *Future broadband - Policy approach to next generation access*, September 2007. (A7.18)

⁴³ ¶49 of EC, *Commission recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment*, 11 September 2013

⁴⁴ “Preis differenzierung besitzt oft einen wohlfahrtsteigernden Effekt. Insbesondere sind die Wohlfahrtseffekte insgesamt positiv, wenn als Konsequenz die nachgefragten Mengen ansteigen”. Monopolkommission, *Telekommunikation 2011: Investitionsanreize stärken, Wettbewerb sicher*, 15 December 2011

⁴⁵ Often lower speed products are artificially

Discounts for new customers

However a recent concern in the UK has been the ‘loyalty penalty’. We note that this is a highly loaded description for a situation where new customers (who may be switchers or entirely new users to the market) get a discount. Such discounts have clear advantages to users, as we will see.

Moreover, such discounts are not unusual – on the contrary, they are very widespread across industries. A Google search for “first month free” provides 18.1m results,⁴⁶ and this is just one example of how such discounts might be described. Examples of products where initial discounts are offered are numerous:

Figure 10: Examples of products and services sold with initial discount

Alarm monitoring	Magazines	Restaurant clubs
Apartment rental	Managed IT services	Storage units
Banking services	Martial arts lessons	Subscription food boxes
Bookkeeping	Music streaming	Subscription software
Car leasing	Newspapers	Subscription vitamins
Child care	Online dating	VPN services
Coworking space	Pay TV channels	Warranty plans
Dance lessons	Personal coaching	Water cooler services
Electricity	Podcast hosting	Website hosting
Gyms	Pool cleaning	Weight loss programmes
Health insurance	Racehorse management	

Discounts are the product of competition among firms to win customers away from their rivals or to grow the market, and reflect the fact that the service in question is less valuable to the prospective customer than the existing customer for the following reasons:

- The prospective customer may face switching costs in deciding to switch to a new provider (such as search costs, the need to be home for a new install, loss aversion regarding the possibility the new product may be less good, and so on)
- The good may be experiential (‘you won’t know it until you’ve tried it’). In this case, the uncertainty a prospective user faces will make the service less valuable than it would be to an existing user. Higher speed broadband might be an example, or broadband itself for someone not yet online

⁴⁶ Google search for the phrase “first month free”, 17 April 2019

- The very fact that a customer is currently a user of another brand suggests (all else being equal) that the customer prefers that brand to that of the firm soliciting their business. As Asplund et al put it: “[F]irm A may target firm B’s consumers with discounts, as those customers have revealed that their valuations of firm A’s product are low”.⁴⁷

Discounts for new customers clearly benefit those customers – but they also can create benefits for *all* customers. Broadly, there are three mechanisms for this. These discounts can enhance competition, adoption and network transition.

Competition benefits from new customer discounts

Regarding competition, Ofcom has noted, “unnecessary switching costs tend to dampen competition”.⁴⁸ By extension, offers that reduce switching costs enhance competition. This is precisely what a discount for new customers does – the discount is in effect a ‘negative switching cost’, offsetting search costs, the need to be at home for installation of the new service and so on.

Enhanced competition brings a host of benefits – it drives firm efficiency, spurs innovation and prompts lower prices overall, for example. The benefit of new user discounts to *all* consumers (via competition) has been long recognised by regulators. In the OFT’s view:

“Switching costs may cause firms to price below cost to customers before they are locked-in and above cost thereafter. A static assessment may find the firm guilty of predatory pricing to new customers and excessive pricing to old customers, whereas a more dynamic analysis would have found that the two cancelled each other out and ‘two wrongs make a right’”.⁴⁹

According to the FCA:

“Under price discrimination, the firm could offer a low price to new customers joining from a rival firm – and offer a higher price to its existing customers. However, its rivals will also price discriminate and target the firm’s existing customers with a low price. The firm has to respond to protect its existing customers and the effect can be that when firms price discriminate, **prices to both new and**

⁴⁷ Asplund, Marcus and Eriksson, Rikard and Strand, Niklas; “[Price Discrimination in Oligopoly: Evidence from Swedish Newspapers](#)”; *CEPR Discussion Paper No. 3269*, March 2002

⁴⁸ Ofcom, [Consumer switching](#), 9 February 2012

⁴⁹ OFT, [Switching Costs – Economic Discussion Paper 5](#), April 2003

existing customers fall compared to competition under uniform prices. ...

“It could also work the other way. There are, in theory, situations where **prices to both customer groups rise**, relative to competition with uniform prices. However, considering the pattern of consumer preferences driving such pricing, this appears unlikely to be a widespread phenomenon.”⁵⁰ [emphasis in original]

Another way to look at this is to note that common prices for both new and existing users would effectively constitute a ‘fidelity rebate’, since once switching costs are accounted for, ongoing customers would be offered a more attractive deal than switchers. However, regulators have been hostile to such fidelity rebates, seeing them as potentially anti-competitive.⁵¹

A practical example of the importance of lower prices for switchers comes from the electricity industry. Until 2009, energy companies expanding to new areas typically offered discounts to customers in those areas to entice them to switch. In 2009 Ofgem introduced a ‘non discrimination clause’ to block this, in part to protect vulnerable groups. However, the consequence was:

“the average amount saved from switching reduced by more than 50%; and many companies withdrew from the new areas they had gone into, retreating into their home areas. This resulted in a dampening of competition, with evidence of increases in the profits of energy firms and price rises for many consumers. Ofgem subsequently declined to renew the non-discrimination clauses when they expired.”⁵²

Adoption benefits from new customer discounts

The merits of discounts for new customers are often discussed narrowly in the context of switchers. However, new users of the service in question are also immediate beneficiaries. This applies to new users of a particular tier of a service (for instance, someone upgrading to ultrafast, or switching to a future 5G plan), and to completely new users of the service (for instance, someone adopting broadband for the first time).

⁵⁰ FCA, *Price discrimination and cross subsidy in financial services*, September 2016. The FCA footnotes that prices to both groups may rise if “a firm has a large proportion of very price-sensitive customers that rivals consider not very price sensitive” – a situation we do not believe pertains to UK telecoms

⁵¹ See for instance the discussion of such rebates in: Swedish Competition Authority, *The Pros and Cons of Price Discrimination*, 2005

⁵² SMF, *Should switch, don't switch*, October 2015

Such users face a number of switching costs (such as search or being home for an install), even though they are ‘switching’ from no service at all. Further, they face the ‘experiential good’ challenge – they may be uncertain if the service in question will be valuable to them. Discounts for new users encourage such users to take up the service.

Governments, including the UK, strongly believe that telecoms services have network effects and other positive externalities (benefits to society as a whole). They may boost the economy, reduce government costs, have environmental benefits and so on. To take but one example, good connectivity will be a pre-condition for an individual to benefit from the NHS’ ‘digital-first primary care’ plan.⁵³

Because of these externalities, adoption of telecoms service has been a policy objective. Discounts for new users supports this policy objective (as do other forms of differentiated pricing, such as cheaper prices for lower speed connections).

Network retirement benefits from new customer discounts

Not only do discounts for new users encourage people to transition to services that may bring externalities, they also encourage people to move *off* services that may be destined for retirement, limiting the period in which services need to be (wastefully) run in parallel. If, conversely, we offered a loyalty discount, we would be encouraging people to be loyal to copper (for instance), pushing out the date when that network could be switched off.

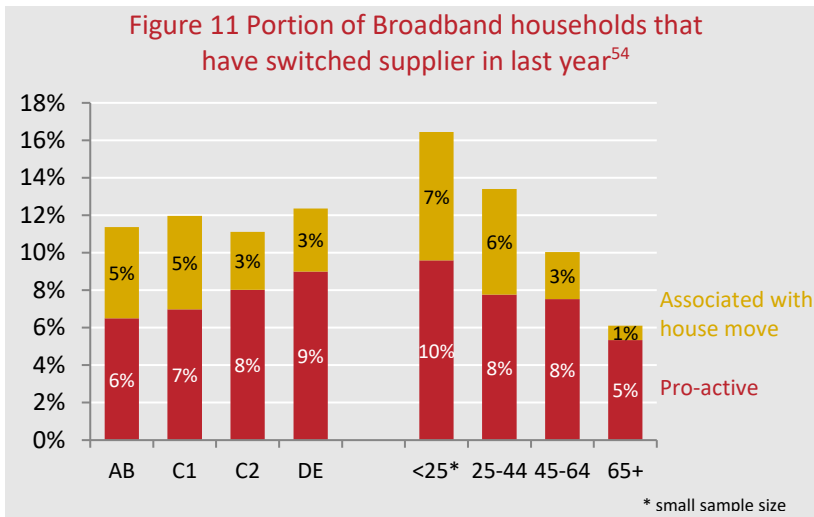
Price differentiation and fairness

Thus price differentiation is – in the circumstances of UK telecoms – very likely to be welfare enhancing. However, there could nonetheless be legitimate policy concerns regarding fairness. Any pricing structure (differentiated or not) creates winners and losers. For example, undifferentiated pricing disadvantages consumers with low willingness-to-pay, since the profit maximising price for the firm is likely to be set at a level that prevents these consumers buying the product.

However, a pricing structure that (for example) particularly disadvantaged vulnerable members of society might be unacceptable on fairness grounds. It has been asserted that this may be the case for UK broadband. However the evidence (from Ofcom’s switching tracker survey) does not support this assertion.

⁵³ NHS, [The NHS Long Term Plan](#), January 2019

We first look at current broadband customers, and consider the portion of users in different groups that have switched provider in the last year. We distinguish between supplier switches made pro-actively, and those prompted by a house move. (In the latter case, a switch may be forced, but certainly the incremental cost will be lower, since a customer will anyway have to be in contact with suppliers, be at home for an install and so on).



Looking at the socio-economic split⁵⁵, we can see that DE households are actually *more* likely to have switched suppliers in the last year (albeit within the statistical margin of error), whether or not we take into account switches associated with house moves.

Looking at age, we see that broadband users aged 65+⁵⁶ are less likely to have switched broadband (and thus to have benefited from introductory discounts). However, this is primarily because this group are less likely to have moved house. When we compare proactive switching, we see that the rate for this group (5.3%) is only modestly below that for those aged 25-64 (7.7%). This suggests that as a group older customers of broadband are not materially more disengaged or unsophisticated than younger cohorts.

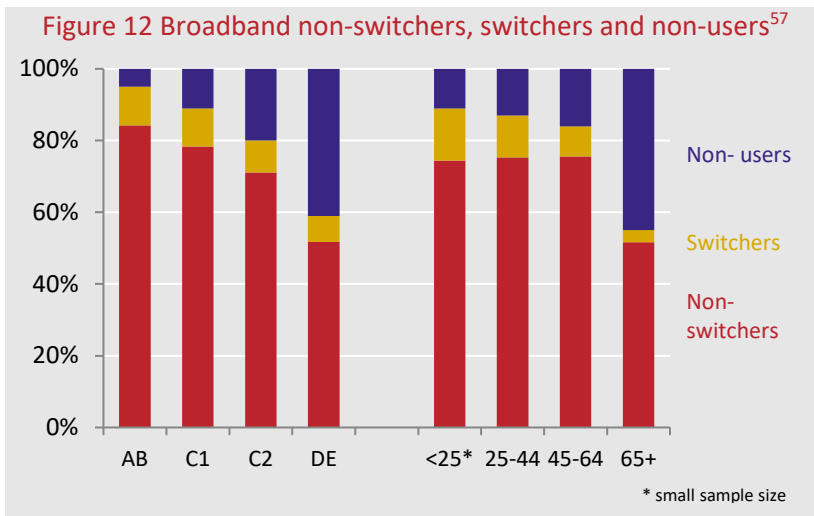
This may in part be because older broadband users are a self-selected group – many in this age group are not online at all.

⁵⁴ Communications Chambers analysis of data from Ofcom, [Core Switching Tracker 2018, 30th August to 30th September 2018](#), 30 October 2018 [p29]. Percentages are based on broadband decision makers. Sample size for 'Under 25' is 73 respondents

⁵⁵ The Market Research Society provides definitions for the social grades of households based on the occupation of the highest earner. These range from 'A' for 'Higher managerial, administrative and professional' to 'E' for State pensioners, casual and lowest grade workers, unemployed with state benefits only'

⁵⁶ Strictly, broadband purchase decision makers aged 65+

Indeed, once we consider those who are not online, the direct benefit of introductory discounts to DE and older consumers becomes even clearer:



Both these groups are substantially more likely to be off-line. (Put another way, they do not regard broadband as an essential service). These offline households are prospective beneficiaries of initial discounts, since they will enjoy them if they move online. Indeed, these discounts might be necessary to persuade them to do so. Thus, while roughly a quarter of those aged 25-64 are actual or potential direct beneficiaries of introductory discounts, almost half of those aged 65+ are.

Another way to look at this is that the notional ‘loyalty penalty’ cannot be said to be falling unduly on older or poorer consumers – on the contrary, these groups are the *least* likely to be on rolled-over contracts.

This is before accounting for the indirect benefit of initial discounts benefiting *all* consumers via enhanced competition. Degraded competition would hurt vulnerable users just as much as general consumers.

Conclusion

As we have seen, both price differentiation in general and price discounts for new users specifically are extremely common across the economy. While price differentiation can, in some circumstances, be negative for consumers, the characteristics of UK telecoms

⁵⁷ Communications Chambers analysis of data from Ofcom, [Core Switching Tracker 2018, 30th August to 30th September 2018](#), 30 October 2018 [p29, 51]. Users re based on all respondents, switching based on broadband decision makers. Decision maker sample size for ‘Under 25’ is 73 respondents

suggest it is likely to be positive. In industries with competition or high fixed costs, differentiation is generally positive for consumers, and UK telecoms has both.

Further, in industries with some level of switching costs or externalities (again, UK telecoms has both), initial discounts tend to be positive since they enhance both competition and adoption.

However, while price differentiation may be economically efficient, and good for consumers in aggregate, it is also legitimate to ask whether it is fair – and in particular, whether it may harm vulnerable consumer groups.

The evidence above suggests that price differentiation in UK broadband is generally *positive* for vulnerable groups. Users within these groups benefit from competition no less than others, but they also particularly benefit from adoption incentives. As we have seen, lower SEGs and older consumers are far more likely to be offline, and regulation that raises initial prices for these offline consumers will run directly contrary to the policy imperative to increase internet adoption. Further, once online, lower SEG customers are also more likely to switch providers, thereby benefiting from initial discounts.

