PERSONALISED PRICING IN ESSENTIAL MARKETS

A report prepared for Citizens Advice

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EXECUTIVE SUMMARY

The growth of big data and analytics allows companies to better understand their customers. This, in turn, raises the prospect that companies may use this enhanced understanding to develop personalised pricing strategies to a far greater degree than we have seen before. We define personalised pricing to arise where firms set different prices for individual consumers, or individually tailor products given consumers' preferences. This goes beyond traditional price discrimination, which typically involves offering different prices to different groups, or offering a range of products at different prices (not solely based on different costs to serve).

Big data potentially both lessens the cost of developing personalised pricing, and allows companies to target consumer willingness to pay in a more refined manner, as a result of greater insights into customer behaviours. Companies may also be able to engage in personalised pricing in a less transparent way than traditional methods, where it was more obvious to customers that different prices were being charged to different groups of customers.

Citizens Advice has identified that a knowledge gap in relation to personalised pricing in essential service markets exists. Citizens Advice commissioned Frontier Economics to help fill this knowledge gap to ensure that the potential effects of personalised pricing in essential markets are well understood, and that remedies to address potential material consumer detriments are identified.

Our assessment of personalised pricing in the four sectors (post, telecoms, energy, water) under review is set out in Figure 1. In general, we have found little evidence to suggest that personalised pricing is currently taking place in essential markets. There are also a significant number of safeguards currently in place to protect consumers, as discussed throughout the report.

In relative terms, personalised pricing is more likely to develop in the telecoms and energy sectors, compared to post and water. An assessment of personalised pricing in these markets is, however, somewhat speculative, as significant developments would need to occur before personalised pricing becomes widespread. We therefore also discuss some of these more speculative future personalised pricing scenarios, the circumstances in which we would expect to see adverse welfare or distributional impacts, and potential policy remedies for consideration if such scenarios develop.

Figure 1 Summary assessment of personalised pricing in essential market.

Framework section	Post	Telecom	Energy	Water
(1) Are the conditions necessary for price discrimination present?	Some current segmentation by payment channel and weight.	The current pricing structure is likely, to some extent, to reflect the different cost to serve customers with different usage patterns. It may also include an element of price discrimination. However, the information is not publicly available to distinguish between these two effects.	Suppliers' tariff offerings do currently reflect some customer segmentation. The current pricing structure is likely, to some extent, to reflect the different cost to serve customers with different usage or payment patterns. It may also include an element of price discrimination. However, the information is not publicly available to distinguish between these two effects.	No price discrimination due to consumer safeguards.
(2) What are the pricing strategies available?	Consumer safeguards and lack of consumer data limit the potential for personalised pricing.	Overall, we have not found any evidence to suggest that providers of essential services in the UK telecommunications market are implementing any personalised pricing.	We have not found any evidence to suggest that personalised pricing practices are being undertaken by energy retail suppliers.	Consumer safeguards and lack of consumer data prevent the potential for personalised pricing.
(3) Could personalised pricing impact on welfare?	The welfare impact of potential future customer segmentation practices in the parcels market is likely to be positive, if anything.	It is currently not clear exactly how pricing will evolve and what the end point will look like for the sector in the future. Potential future developments are discussed further below.	It is currently not clear exactly how pricing will evolve and what the end point will look like for the sector in the future. Potential future developments are discussed further below.	N/A
(4) Are there likely to be distributional impacts from personalised pricing?	Limited distributional concerns as limited potential for personalised pricing.	Several potential issues are already the focus of Ofcom's current consumer engagement review. If Ofcom could successfully implement solutions, the distributional impact could be significantly dampened.	Going forward, the level of consumer engagement in the market, and representation of vulnerable customers within the disengaged segment, will play a key role in both the welfare and distributional effects of future customer segmentation in relation to tariffs.	N/A
(5) Are there appropriate safeguards in place to protect consumers?	General and sector-specific safeguards are in place.	General and sector-specific safeguards are in place.	General and sector-specific safeguards are in place.	General and sector-specific safeguards are in place.

Source: Frontier Economics

Potential future trends in personalised pricing

Our research finds little evidence to date of personalised pricing in essential service markets. There are also a number of factors in each market which may limit the prevalence of personalised pricing in the future.

With the ever-increasing growth of personal data and increasingly sophisticated analytical techniques, it is possible to envisage future scenarios where personalised pricing becomes much more widespread. For example, consumers' homes are likely to become increasingly 'smart' over time with a plethora of devices connected to the internet. Those 'smart homes' may produce considerable new, real-time consumer data that would allow for as-yet unknown product offerings. These data sets may also be connected or integrated with wider datasets (e.g. from social media) to provide a richer sense of consumer preferences. The development of such new product offerings and data on consumer preferences may be accompanied by increasingly sophisticated and personalised pricing strategies.

Potential welfare and distributional impacts of such pricing changes

In aggregate, the welfare impact of new, innovative product offerings and personalised pricing would depend on the balance of potentially higher prices to some consumers, lower prices to other consumers (which would in turn increase output) and the extent to which competition is intensified due to new product and pricing strategies.

If personalised pricing arises because of entry and disruption of traditional markets, then it is likely that, in aggregate, competition would intensify and the level of output would increase, at least in the short term. The balance would depend on the degree of concentration across markets and access to data, versus the ease of new entry and the sensitivity of demand to changes in price. Regulators should be careful to ensure that concerns about future personalised pricing do not create barriers to such innovation.

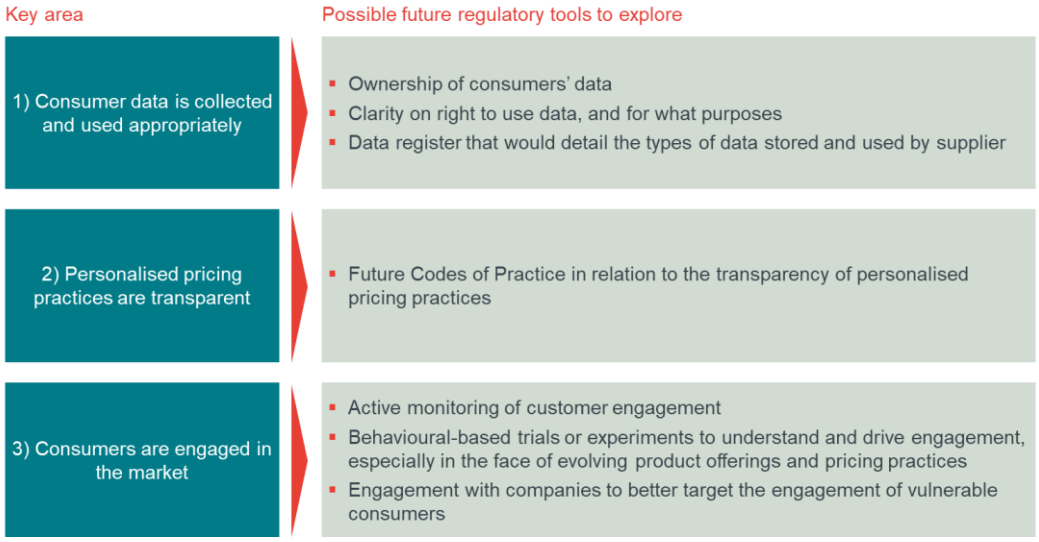
Even if personalised pricing is broadly welfare enhancing across consumers, there could be adverse **distributional consequences**. For example, a lack of 'standardised' pricing can make it more challenging for consumers to compare across products and suppliers. A common behavioural response to such complexity is inertia. That is, consumers could respond to the increased complexity by becoming less active in the market, or choosing not to enter the market, as they do not want to risk making the 'wrong' decision when switching supplier or product offering. Moreover, vulnerable consumers may face particular challenges in fully engaging in the market.

Policy implications

Personalised pricing has the potential to evolve in unknown ways over the coming years. As the amount of consumer data generated increases, this may in turn lead to new pricing strategies and practices becoming available to firms.

In general, there is a presumption in favour of allowing innovation and disruption in the market as it is considered likely to be pro-consumer. However, given the evolving nature of personalised pricing, we have identified three areas with emerging challenges. In these areas, Citizens Advice may wish to engage with regulatory authorities to ensure that they are able to respond appropriately should adverse impacts from personalised pricing appear likely to emerge.

Figure 2 Key areas for future regulatory considerations for personalised pricing



1 INTRODUCTION

Price discrimination is not new. Familiar examples of price discrimination include loyalty discounts and penalties, volume based discounts and premiums, time-based pricing and premiums, and pricing structures that offer discounts based on customer status, such as student or OAP discounts. Personalised pricing goes beyond pricing differently to different groups, or offering a range of products at different prices (not solely based on different costs to serve)[1]. Rather, personalised pricing is where firms set different prices for individual consumers, or tailor products individually given consumers' preferences.

The emergence of big data has raised the prospect of companies personalising their pricing strategies to a far greater degree than we have seen before. Big data potentially both lessens the cost of developing personalised pricing, and allows companies to target consumer willingness to pay in a more refined manner as a result of greater insights into customer behaviours. Companies may also be able to engage in personalised pricing in a less transparent way than traditional price discrimination methods, where it was more obvious to customers that different prices were being charged to different groups of customers.

Consequently, a number of agencies and regulatory bodies (including the OFT, the OECD and the US Council of Economic Advisors) have undertaken initial research into the potential consumer effects of personalised pricing. Typically, they have found that the economic effects of such pricing strategies are ambiguous. However, the studies have all identified that, apart from the future welfare effects, it is also important to consider the potential distributional effects associated with personalised pricing.

Citizens Advice has identified that, to date, much of the research on personalised prices has been carried out at a general level, or examining more traditional digital or online markets. There has not been significant research to date in relation to personalised pricing in essential service markets, as defined further below. Citizens Advice wishes to fill this knowledge gap to ensure that the potential effects of personalised pricing in essential markets are well understood, and that remedies to address any material consumer detriments are identified.

1.1 Sectors of interest

This research focuses on consumer-facing essential markets. These are markets where consumers have relatively few substitutes, and are typically considered to be utility or network industries. These sectors are all subject to certain forms of economic regulation. Citizens Advice has asked us to consider the following sectors:

- water;
- post;

[1] The Office of Fair Trade defined personalised pricing as "as the practice where businesses may use information that is observed, volunteered, inferred, or collected about individuals' conduct or characteristics, to set different prices to different consumers (whether on an individual or group basis), based on what the business thinks they are willing to pay". Office of fair trade (2013) "*Personalised Pricing increased transparency to improve trust* "

- telecommunications;
- electricity; and
- gas.

1.2 Structure of the report

The remainder of this report includes:

- an analytical framework for assessing personalised pricing in essential markets;
- discussion of general consumer protections;
- application of the framework to:
  - water;
  - post;
  - telecoms; and
  - energy;
- potential future trends in personalised pricing; and
- conclusions and policy implications.

2 ANALYTICAL FRAMEWORK

This section details our analytical framework for assessing personalised pricing in essential markets. The framework draws upon the economic literature on price discrimination, the nascent literature on personalised pricing, and insights gleaned from stakeholder interviews. Later in this report, we apply the framework to the essential markets of interest.

The framework, which we discuss in detail below, is summarised in Figure 3.

Figure 3 Summary of analytical framework

Key aspects	Factors to assess
1. Are the **conditions necessary for price discrimination** present?	a. Can firms price above costs? Are there any regulatory restrictions on pricing? b. Can customers be segmented? c. Are consumers/intermediaries able to resell? d. Are there regulatory restrictions on pricing levels or structures?
2. What are the **pricing strategies** available?	a. What category of price discrimination can firms engage in? (1st, 2nd or 3rd) b. Can firms engage in static or dynamic price discrimination? c. What types of information can firms in the sector gather to allow for personalised pricing? d. Has the type of information available changed in a manner that would impact on the likelihood of personalised pricing?
3. Could personalised pricing **impact on welfare**?	a. Would prices likely increase for less price sensitive customers? (Appropriation effect) b. Would output likely expand to serve more price sensitive customers? (Output effect) c. Would price discrimination intensify competition? (Intensified competition effect) d. Does the balance of these three effects suggest price discrimination could be harmful or beneficial in aggregate?
4. Are there likely adverse **distributional impacts** from personalised pricing?	a. Could price discrimination in the sector impact on vulnerable customers? (Beneficial or harmful.) b. Could price discrimination reduce consumer trust? c. Could personalised pricing result in de facto discrimination?
5. Are appropriate **safeguards in place** to protect consumers? (We discuss general safeguards in Chapter 3, and sector-specific safeguards in relevant sections.)	a. What protections do general consumer safeguard regulations/laws offer? b. Are there other sector–specific safeguards that protect consumers (such as sector codes of conduct or requirements in relation to vulnerable consumers)?

Source: Frontier Economics

2.1 Conditions necessary for price discrimination

The first stage of the framework is to determine whether there is scope for personalised pricing. There are certain basic conditions that are necessary for price discrimination to be possible. As personalised pricing is a particular form of price discrimination, these conditions would need to be met for personalised pricing strategies to be successfully implemented. These will typically include:

- ability to price above costs;
- ability to segment customers; and
- inability to resell (or, arbitrage).

2.1.1 Ability to price above costs

Firms need to have the ability to price above the incremental costs of producing the product in order to price discriminate. That is, the firm needs to have some degree of market power, but this doesn't necessarily need to be significant[2].

In a *perfectly* competitive market, where there are many well-informed buyers and sellers, price discrimination cannot exist. This is because if a firm increases its prices for any consumer, that consumer will immediately take their business to another company. Therefore, if a firm increases its price for any of its consumers, its sales reduce to zero – because all consumers know they can get a better deal elsewhere.

But most markets are not like this and consumers don't always shift away from a firm when they increase their prices. Therefore, firms can often increase the price of a good above the incremental (or 'marginal') cost of producing it. The ability to price above costs may then therefore allow firms to offer different prices to different customers for the same product.

A firm's ability to price above cost may also depend on regulatory restrictions on the price level or structure that it can set (e.g. firms that are subject to price control regulation).

[2] McAfee, Mialon and Mialon (2006), "Does Large Price Discrimination Imply Great Market Power?"

Aspects to assess	Examples
▪ Market structure and characteristics ▪ Regulatory restrictions ▪ Observed prices and pricing practices	▪ Number of market players and market concentration ▪ Barriers to entry ▪ Regulated vs. non-regulated aspects of market ▪ Type of regulation (price/revenue control, tariff or product requirements) ▪ Tariff differences, such as switching tariffs

2.1.2 Ability to segment customers

Firms must be able to segment consumers in order to price discriminate. Segmenting consumers can occur either in terms of:

- how much different consumers are willing to pay; or
- costs to serve the consumer.

Therefore, to determine the price a firm can charge a consumer or group of consumers, it needs to be able to estimate how much that consumer or group of consumers values a product.

Firms can estimate a consumer's valuation for a product based on observable characteristics, or by allowing the consumer to reveal information about their valuation (over time or in certain conditions). The ability to segment customers has been made easier in certain circumstances with the move towards firms acquiring large amounts of customer data and employing sophisticated analytical tools. For example, in some digital markets, firms can use previous online shopping or search behaviour to target future product offerings.

Consumer segmentation may also be possible due to behavioural traits (and we discuss these different behavioural traits in the text box below). For example, consumers exhibiting certain behavioural traits – such as preferences for ease or for existing purchasing habits – may be prepared to pay more than other consumers. This can lead to different prices for consumers that, for example, readily switch and those that do not; these groups of consumers are often referred to as 'engaged' or 'disengaged' consumers. The level of consumer engagement is typically a spectrum, where some consumers are more or less engaged in the market than others, and where consumers level of engagement can change over time given their certain circumstances[3].

[3] This spectrum of engagement has resulted in more nuanced segmenting of consumers, such as Ofcom's use of four engagement segments: inactive, passive, interested and engaged. See, for example, Ofcom, 2017,*Helping consumers to engage in communication markets.*

Aspects to assess	Examples
▪ Characteristics of each firm's customers	▪ Access to certain payment methods, e.g. Direct Debit or online only ▪ Connection to gateway products e.g. Google or Alexa ▪ Low vs. high usage ▪ Location

UNCONSCIOUS THOUGHT – THE NINE TRAITS

In applying this framework, it is essential toto consider consumer behaviour in essential markets. Traditional economic models typically assume that people maximise their utility by considering all the available incentives, and then acting logically based on that consideration. Consumers do not always behave in this way, however. There are several reasons why this may not be the case.

One useful way of thinking about consumer behaviour is to differentiate between conscious thought and unconscious thought. Conscious thought involves logically (i.e. following clear steps and principles), and rationally (i.e. including reason and knowledge), weighing up the costs and benefits of a particular decision, as above. Unconscious thought – which can often dominate – involves more short-cuts.

There are nine key traits to unconscious thought in the behavioural economics literature[4]:

1. **Priming:** What first thoughts or messages shape your actions?
2. **Framing:** What is the context that you have been given?
3. **Loss aversion:** How is fear of missing out in future affecting behaviour?
4. **Attention:** How much do you think about this normally?
5. **Association:** What do you implicitly associate (positively or negatively)?
6. **Reward:** Does the product or process provide a buzz?
7. **Ease/Habit**: Which option is easiest or most convenient?
8. **Social proof:** What do you see, think and feel others do?
9. **Heuristics:** What rules of thumb do you use in situations like these?

We discuss some of these behavioural traits further when applying the framework to the sectors below.

2.1.3 Ability to resell

If a firm tries to charge one customer more than another customer, there may be an incentive for the customer with the lower price (or an intermediary) to resell the product to the customer that faces the higher price. This process is known as

[4] See, for example, Kahneman, D. (2003). "*Maps of bounded rationality: Psychology for behavioral economics"*. American economic review, 93(5) or Thaler, R. H., Tversky, A., Kahneman, D., & Schwartz, A. (1997). "*The effect of myopia and loss aversion on risk taking: An experimental test*." The Quarterly Journal of Economics, 112(2), 647-661.

arbitrage – where a product is simultaneously bought and sold to profit from differences in price. Therefore, when arbitrage is possible in the market, a firm's ability to personalise prices will be undermined as arbitrage will push the higher and lower prices closer together

The ability of a firm to prevent resale is often considered a necessary factor for first and third-degree price discrimination, discussed in further detail below. The intrinsic nature of a product can prevent arbitrage as it may perish quickly or be hard to transport. Firms can also put restrictions on resale which make it expensive to resell the product[5].

Resale may often be done by a third-party at the wholesale level, rather than by consumers. For example, if a product is available for a lower price in one geography, a wholesaler may be able to purchase that product at the low price and transport it to another geography for resale. The ability for such resale is less obvious in essential service markets, where products are typically delivered directly to final consumers. However, as discussed further in the application section below, in the future intermediaries could enable consumers to dynamically switch between providers depending on available prices and qualities of products offered. If this were possible, this may also push high and low prices closer together, therefore reducing the ability to price discriminate.

Aspects to assess	Examples
▪ Characteristics of the products offered	▪ Nature of the product, including how consumed, e.g. direct to home ▪ Purchase conditions or restrictions on resale

2.2 Type of price discrimination

Price discrimination is when firms sell products at different prices based on factors other than just the cost of producing those products. For example, when two similar products, which have the same marginal cost to produce, are sold by a firm at different prices[6]. Or, if the price differential between different versions of a product is larger than the difference in cost between producing the two different versions (for example, a regular and extra-large coffee).

Price discrimination or differential pricing is widely practiced in both the product and service industries[7]. Firms use price discrimination to set the prices of their goods or services taking into account customers' price sensitivities rather than only taking account of the costs to produce the goods or services[8].

5 Varian (1989) Handbook of industrial organization vol1 , ch10 ,

6 OECD (2016) " Price Discrimination"

7 Syed Asif Raza, An integrated approach to price differentiation and inventory decisions with demand leakage... International Journal of Production Economics, Volume 164, June 2015, Pages 105-117
http://www.emeraldinsight.com/doi/pdfplus/10.1108/JM2-07-2013-0035

8 US Council of Economic Advisors (2015) "BIG DATA AND DIFFERENTIAL PRICING "
https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/docs/Big_Data_Report_Nonembargo_v2.pdf

Price discrimination is typically considered across three different categories, as described further below. Firms require different levels of consumer information to successfully undertake the different types of price discrimination.

Figure 4 Typology of price discrimination

Source: Frontier Economics

Until recently, first-degree price discrimination was only a theoretical construct as, to implement this form of price discrimination firms would be required to set prices knowing exactly how much consumers are willing to pay. Recently, the availability of more consumer data and enhanced data analytical techniques[9] has led to suggestions that, over time, personalised pricing may come to more closely resemble first-degree price discrimination[10]. However, personalised pricing typically involves a more refined version of third-degree price discrimination as firms approximate customers' willingness to pay. Personalised pricing may also replace second degree pricing (where the individual chooses which version they wish to buy[11]). This is because firms will be able to refine the versions they offer as more customer information is revealed them to them. Price discrimination of this nature could rely on behavioural nudges using traits such as framing and priming of products or price offers.

An alternative categorisation of price discrimination (and an important aspect to consider) is whether it is static or dynamic. This can cover multiple types of 'traditional' forms of price discrimination.

- **Static price discrimination** occurs when all goods are purchased within a single period. It includes:
  - discrimination between identifiable different customer groups with different characteristics ('traditional' third degree price discrimination, such as for students or OAPs)[12]; and

[9] Shiller (2014) "First-Degree Price Discrimination Using Big Data"

[10] OECD (2016) " Price Discrimination "

[11] McAfee, (2008), "Price Discrimination", Issues in Competition Law and Policy, Ch.20, No. 1, 465 (ABA Section of Antitrust Law).

[12] This is known in the economics literature as "non-anonymous price discrimination".

- quantity discounts and bundled or tied discounts ('traditional' second-degree price discrimination).

- **Dynamic price discrimination** includes:
  - intertemporal discrimination in which the price differs over time; and
  - behavioural discrimination in which the price differs depending on the consumer's behaviour over a period of time e.g. purchasing history.

An assessment of personalised pricing in essential markets therefore needs to consider pricing practices in the sector to determine which types of price discrimination can currently be implemented. This will enable us to understand the types of personalised pricing that are possible now and in the future.

We also consider how pricing practices may evolve given the types of information that firms in the sector can gather to allow for personalised pricing. Any assessment of future behaviour is obviously uncertain. We therefore provide high level illustrative assessments rather than to try to forecast in detail how pricing behaviour may evolve.

Therefore, an assessment of personalised pricing in essential markets should consider the following:

- The impact of large customer datasets: Large consumer datasets are an increasingly important focus in relation to personalised pricing[13]:This includes looking both at the data the company collects and other data that may be available to supplement this.
- The potential pricing practices that such data sets may enable. This includes assessing firms' regulatory and competitive environments to identify what a firm can do with the data they have and whether this gives them an advantage over competitors.

Personalised pricing, and personalised product offerings, are more advanced in some other sectors. Therefore, it is useful to look at developments in these sectors to inform potential future pricing strategies in essential services markets. For example, we set out below the types of algorithm pricing and consumer offerings that are observed in other, mainly digital, markets.

[13] Shiller, B. (2014) "First-Degree Price Discrimination Using Big Data"

EXAMPLES OF ALGORITHM PRICING AND OFFERINGS USED IN OTHER SECTORS

Ranking/recommendation algorithms: Seek to predict and gauge a consumer's preference for a good or service, with search results or content recommendations ranked and presented accordingly.

Matching algorithms: Similar to recommendation algorithms, matching 'buyers' with specific 'sellers' or service providers, based on the buyer's circumstances or the variables they have selected.

Predictive algorithms: Algorithms that infer consumer preferences and willingness to pay, and target offers or prices based on those inferences. These algorithms may, for instance, group and classify consumers, offering deals or discounts to steer the consumer to make a purchase.

Cross-merchandising algorithms: Algorithms that promote a seller's other goods or services to a buyer based on, for example, that buyer's browsing or purchasing history.

Filtering and selecting: Algorithms that use and analyse personal data about a consumer to determine a personalised price for a particular good or service.

Dynamic pricing: Algorithms automatically adjust prices or discount offers, typically to respond to changes in competitors' prices, or the relative levels of supply and demand (e.g. surge pricing).

Risk assessment: Insurance and other companies use algorithms to analyse data about an individual's circumstances and assess the risk that that individual will, for example, claim on an insurance policy or default on a loan.

Source: OECD, 2017, "Algorithms and Collusion - Note from the United Kingdom"

2.3 Welfare effects

Personalised pricing could theoretically lead to overall improvements or reductions in welfare.

The next stage of the framework, therefore, sets out the circumstances that determine whether price discrimination, in general, will be harmful or beneficial. This is done at the aggregate level, as well as for sectors, sub-sectors, or customer groups. The insight from the general price discrimination literature is then applied to personalised pricing specifically.

WHAT ARE WELFARE EFFECTS?

Welfare effects are the changes in aggregate societal well-being. Consumer welfare refers to the individual benefits derived from the consumption of goods and services. Exact measurement of consumer welfare therefore requires information about individual preferences.

Source: OECD

The Office of Fair Trade conducted research into personalised pricing and found that price discrimination typically can cause four effects[14]:

- **Appropriation effect** is where firms set higher prices for consumers who are willing to pay more (i.e. customers who are less price sensitive). The consumers who are charged these higher prices are made worse off, therefore reducing consumer welfare.
- **Output expansion effect** is where firms set lower prices to consumers that would not purchase unless prices are lower (i.e. more price sensitive) consumers. This expands the output in the market as these consumers would not consume under a uniform price.
- **Intensified competition effect** is where price discrimination leads to greater competition in the market as firms can offer more competitive prices to other firms' customers.
- **Commitment effect** is where price discrimination allows for firms to be flexible in setting their prices and do not have to commit to future price increases.

How these four effects balance will determine the welfare effect of price discrimination. The appropriation effect is the only effect from above that has a negative welfare effect on consumers.

2.3.1 How can we analyse the balance of the appropriation and output effects?

Balancing appropriation effect and the output effect involves considering the individual characteristics of the sector. The key considerations are outlined below.

- **Ability for firms to set prices above non-personalised levels:** The ability of firms to raise prices depends on several factors, including:
  - Sensitivity of demand to prices: If some consumers are less sensitive to price changes, this will mean that firms may be able to price above non-personalised prices for these consumers. Without personalised pricing, these consumers may have been protected by other, more marginal consumers with lower willingness to pay. This is because a firm that is unable to personalise prices (or price discriminate more generally) would have to set a single price to maximise profit – balancing the demands of different consumers.
  - Ability for consumers to opt out: If consumers can opt out of personalised pricing, this will reduce the ability of firms to appropriate consumer welfare. For example, opting out may be through maintaining ownership rights over data, choice of whether to share that data with providers, or the level of data detail to share. Transparency in relation to whether prices are personalised is also a factor that should be considered[15].
  - Potential for adverse consumer reaction: Consumer reaction is cited as one of the reasons why personalised pricing is not often easily observed[16]. For

[14] OFT (2013) "The economics of online personalised pricing"

[15] Executive Office of the President of the United States (2015) "Big Data And Differential Pricing"

[16] Bourreau, B., de Streel, A., and Graef, I. (2017), *"Big Data and Competition Policy: Market power, personalised pricing and advertising"*

example, there was a large adverse reaction amongst consumers to Amazon's previous use of consumers' purchasing history to increase prices of future DVD purchases[17]. This consumer reaction led to Amazon discontinuing this pricing practice.

- Consumer protections: Sector-specific consumer protections may also limit the ability of firms to appropriate consumer welfare through personalised pricing.

- **Potential for output expansion through lower prices:** Personalised pricing in the form of discounts would lead to increased output. However, the extent to which output could be expanded is partly determined by the sensitivity of demand to price changes (i.e. demand elasticity). If demand is sensitive to price, then small changes in price can result in relatively large changes in output. On the other hand, if demand is not sensitive to changes in prices, then changes in prices can result in relatively little output effect.
- **Potential for output expansion through different product offerings (or quality)**: Some sectors may have greater scope for output expansion than others. For example, in the absence of price discrimination, a firm may set a product's price-quality combination at a level which would preclude some consumers from purchasing. These consumers could be infrequent users, low-income consumers, or consumers that generally prefer a lower price-quality combination. If second degree price discrimination was possible, however, firms in that sector could better match their product offerings with heterogeneous preferences, thereby expanding output. Personalised product offering could have similar output effects.

2.3.2 How do we consider the competition intensifying effects?

There are two key aspects to focus on in analysing the impact of the competition intensifying effect.

First, an analysis of the intensity and nature of competition in the market should be undertaken. This involves looking at the past, current and future state of the market. In looking at how competition has evolved over time, it is useful to look at data on how often consumers switch, if available, and to try to map this with any personalised pricing trends which have been found.

For example, personalised pricing (or price discrimination) would not intensify competition in a monopoly setting. In a monopoly setting, a firm can extract a greater share of consumer surplus if it can collect and use more information about consumers[18]. Therefore, in a monopoly setting the balance between the appropriation effect and the output effect would be the two main considerations.

In an oligopoly model, however, the intensified competition effect can cause price discrimination to have a positive effect on consumers[19]. For example, a firm that can view the purchasing history of a consumer can conceivably offer lower prices

[17] OFT (2013) "The economics of online personalised pricing"

[18] Bourreau, B., de Streel, A., and Graef, I. (2017), *"Big Data and Competition Policy: Market power, personalised pricing and advertising"*

[19] OFT (2013) "The economics of online personalised pricing"

to that consumer compared to rival firms that do not have the same depth of consumer information.

Following this, the degree of brand loyalty in the market versus the choice of brand behaviour based on other factors (e.g. switching costs) should be analysed. Behavioural traits are an important consideration in answering this question. While it may look as though some customers have a high degree of brand loyalty, they may actually not be switching due to attention, ease/habit and/or heuristics.

The degree of "symmetry" in the market may also impact affect the competition intensifying effect

The competition intensifying effect is affected by the presence of "best-response symmetry" or "best-response asymmetry"[20].

That is, with **best-response symmetry**, all firms identify the same consumers, or group of consumers, in the same groups. For example, consumers with high willingness to pay and consumers with low willingness to pay. These groups are often called the "strong group" and the "weak group", respectively[21]. Therefore, in the presence of price discrimination, if all firms group consumers the same, firms will each price high to the strong group and price low to the weak group. The overall impact of price discrimination in this case would be ambiguous as some consumers would benefit, while others would be worse off.

On the other hand, **best-response asymmetry** is where firms identify different "strong groups" and "weak groups". For example, imagine a case where a certain set of consumers prefer Firm A because Firm A is the traditional incumbent in the region. Firm B may therefore charge those consumers a lower price to induce them to switch (i.e. identify them as the "weak group"), whereas Firm A may charge those consumers a higher price due to their preference for Firm A (i.e. identify them as the "strong group"). Conversely, Firm A may price lower to the group of consumers that prefer Firm B, whereas Firm B would price higher to those customers.

Therefore best-response asymmetry can result in more intense competition across consumers and lower prices[22].

Over time, a market may move from being asymmetric to symmetric. As a result, market analysis should be updated to reflect market changes to ensure continued customer protection.

2.3.3 Summary of our approach to assessing welfare effects

The below table summarises our approach to assessing the welfare effects of personalised pricing.

[20] Corts, (1998), "'Third-Degree Price Discrimination in Oligopoly: All-Out Competition and Strategic Commitment,' Rand Journal of Economics, 29(2), 306–323.

[21] OFT (2013) "The economics of online personalised pricing"

[22] OFT (2013) "The economics of online personalised pricing"

Aspects to assess	Examples
a) Would prices likely increase for less price sensitive customers? (Appropriation effect)	▪ Type of customer targeted by higher prices ▪ Evolution of quality over time
b) Would output likely expand to serve more price sensitive customers? (Output effect)	▪ Price elasticity ▪ Volume trends in the market over time
c) Would price discrimination intensify competition? (Intensified competition effect)	▪ Intensity and nature of competition over time (and future outlook) ▪ Degree of brand loyalty vs. choice based on other factors
d) Does the balance of these three effects suggest price discrimination would be beneficial or harmful?	▪ Comparison of size and direction of the above trends

2.4 Distributional effects

Even if personalised pricing were to benefit consumers in aggregate, there might still be negative distributional effects. Total consumer welfare effects and the distribution of that welfare are interrelated, in that factors that impact on consumer welfare may impact on the distribution of that welfare, and vice versa. This section, however, discusses the factors which are most relevant to the *distribution of welfare,* as these are likely to impact more significantly on certain sub-groups of consumers.

WHAT ARE DISTRIBUTIONAL EFFECTS?

Distributional effects relate to the way in which welfare is distributed between individuals or groups within society. That is, distributional effects can increase or decrease the costs and benefits to different groups in society, even if an action is overall welfare enhancing.

As discussed above, personalised pricing can lead to some consumers paying less, while other consumers could end up paying more. Such pricing differential would be based on estimated consumers' willingness to pay. Consumers with high willingness to pay are typically consumers that receive the highest value for consuming the product in question. Consumers with higher incomes may also, on average, have higher willingness to pay for some products[23].

There may, however, be other reasons why consumers have higher willingness to pay. For example, certain behavioural traits may lead to some consumers having higher willingness to pay.

The distributional consequences of personalised pricing are therefore important to consider. Our framework considers three specific distributional concerns arising from the potential for personalised pricing. These are:

[23] See, for example, Roe, B., Teisl, M. F., Levy, A., & Russell, M. (2001). *US consumers' willingness to pay for green electricity*. Energy policy, 29(11), 917-925.

- the impact on vulnerable customers;
- discrimination; and
- the impact on consumer trust.

Below we discuss the implications of personalised pricing on each of these distributional concerns.

Impact on vulnerable customers

As discussed, personalised pricing would likely lead to lower prices for those with lower willingness to pay. Consumers that are less sensitive to prices may end up paying more, however.

From a distributional perspective, it may be a concern if those that end up paying more are doing so because they have fewer alternative providers to switch to. There are several factors that may impact upon some consumers' ability to switch. For example:

- difficulties accessing credit;
- confusing or complex pricing structures;
- lack of knowledge about the benefits of switching;
- lack of internet access; or
- cognitive capacity.

Therefore, assessing the impact of personalised pricing within a sector needs to consider the different characteristics of segmented customers. For example, toto what degree is the personalised pricing observed consistent with offering prices to consumers based on their underlying value of the product versus on consumers' willingness and capacity to switch? To the extent that personalised pricing is based on consumers' ability to switch, or lack of, it is important to consider whether this has a disproportionately negative impact on vulnerable customers.

Related to the above, a sector-based analysis of personalised pricing should consider the complexity of the pricing structures involved. On the one hand, complex pricing may reduce consumer engagement, and make it hard for consumers to know what they are paying, or accurately compare alternatives. On the other hand, industry feedback during our research suggests that future personalised pricing could make pricing less complex. This is because third party intermediaries may enter the market to offer consumers dynamic products where they constantly search for better prices for the consumers. Such products could be based on usage patterns, for example, and switch providers on the consumers' behalf to capture those lower prices. It is, however, unclear whether vulnerable consumers will have the same capacity to access such products, for example, due to digital exclusion or credit constraints. (Consumer trust in the market and market participants will impact the extent to which this is possible, which we discuss in further detail below.)

Also, previous efforts to limit complex pricing in some markets have resulted in an adverse impact on competition This has then resulted in higher average prices for consumers[24].

Related to the above is the transparency of personalised pricing structures. Do customers understand that the firm is applying personalised pricing? The concern about transparency has led to proposals that firms should be required to disclose when they are engaged in personalised pricing[25]. Linked to this is the issue of privacy of consumer data and concerns about access to, and ownership of consumer data. While this is a separate issue to personalised pricing, the tracking, aggregation and use of large amounts of personal information is typically required for personalised pricing[26].

Discrimination

There is also a related concern that personalised pricing could potentially mask discriminatory behaviour on the part of firms. Such behaviour is outlawed under the Equality Act 2010. In this case, the risk is that, given the potentially huge number of variables available, firms will mask explicit discrimination by choosing segmentations that are closely related to race, gender, etc[27]. This has been identified as a particular concern with respect to algorithmic pricing, where the algorithms may be unknowingly engaging in discriminatory pricing behaviour.

Companies do have access to an ever-increasing amount of data on their customers and the combination of big data and differential pricing is raising serious concerns for consumer protection. Big data may also facilitate discrimination against protected groups. Even if a price discrimination practice was not intended to discriminate, some will have an adverse impact on a protected group. A US report on price discrimination argues that big data can in fact be used to ensure that anti-discrimination laws are not being broken by conducting statistical tests to ensure prices generated by a particular algorithm are not correlated with variables such as race, gender or ethnicity (once other factors are controlled for)[28].

Impact on consumer trust

Another potential distributional concern in relation to personalised pricing is the impact on consumer trust. Research to date suggests that consumers do not like personalised pricing and perceive it as being unfair. This is exacerbated in situations where firm behaviour and pricing practices are opaque and where consumers feel that firms are taking advantage of their private data to exploit them.

[24] For example, the CMA in its Energy Market Investigation found that Ofgem's Simple Tariffs policy had an adverse effect on competition.

[25] Bourreau, B., de Streel, A., and Graef, I. (2017), *"Big Data and Competition Policy: Market power, personalised pricing and advertising"*

[26] Executive Office of the President of the United States (2015) "Big Data And Differential Pricing"

[27] Executive Office of the President of the United States (2015) "Big Data And Differential Pricing"

[28] Executive Office of the President of the United States (2015) "Big Data And Differential Pricing"

For example, Garbarino & Lee found that consumers' experience of a dynamic pricing event and the direction of the pricing discrimination (i.e. whether one is offered the higher or lower price) can have a significant impact on customer trust[29].

The above suggests that personalised pricing could impact consumer trust in markets. This may lead to distributional concerns if reduced trust leads to consumers disengaging from the market. Therefore, in applying this framework to personalised pricing in essential markets, we consider the potential impact on consumer trust. As part of this, we consider the protections currently in place to promote consumer trust, both at a general level and at a sector specific level.

2.4.1 Summary of our approach to assessing distributional effects

The below table summarises our approach to assessing the distributional effects of personalised pricing.

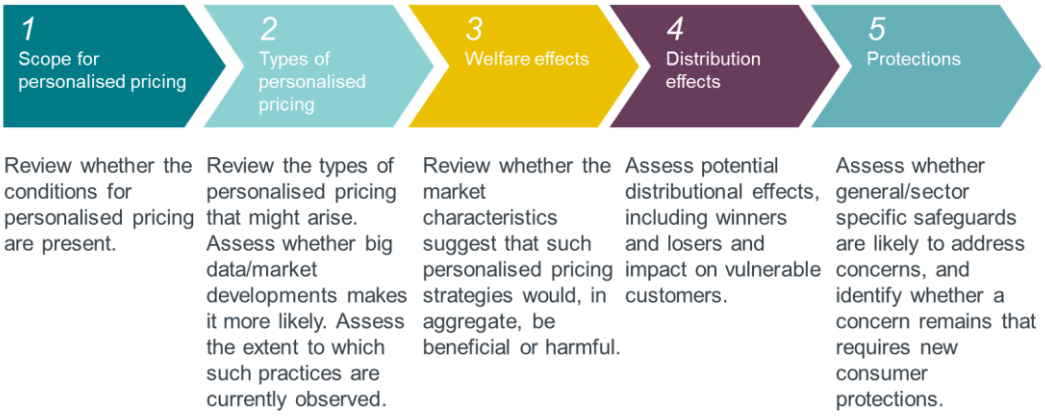
Assessment question	Assessment evidence
a) Could price discrimination in the sector adversely impact on vulnerable customers?	▪ Definition of vulnerability in each sector ▪ Profile of customers targeted by personalised pricing ▪ Complexity and transparency of pricing structures
b) Could price discrimination reduce consumer trust?	▪ General level of trust in companies operating in the sector and trends over time ▪ Complexity and transparency of pricing structures
c) Could personalised pricing result in de facto discrimination?	▪ Profile of customers targeted by personalised pricing ▪ Complexity and transparency of pricing structures

2.5 Application of framework to essential markets

In the remainder of this report, we apply this framework to the essential markets that we are considering. We summarise how this is applied in Figure 5 below. In applying this framework, it is important to take account of the future outlook for each sector as well as the current position.

[29] Ellen Garbarino & Olivia.F.Lee (2003)Dynamic Pricing in Internet Retail: Effects on Consumer Trust

Figure 5 Summary of how framework is applied against sectors



Source: Frontier Economics

Before applying this framework, we first summarise the existing relevant consumer protections in the section below.

3 CONSUMER PROTECTIONS

Having developed the framework for the analysis, and before applying it to each sector, we review the extent to which there are already consumer protection safeguards toto remedy or ameliorate the potentially harmful effects.

In this section, we outline the consumer protection mechanisms that are currently in place across essential markets. These are:

- Equality Act;
- Provision of Services Regulation;
- Consumer Protection from Unfair Trading Regulations;
- General Data Privacy Regulations;
- Competition Act; and
- other applicable protections.

In the following sections where we apply our framework to each sector, we consider in greater detail the sector-specific consumer protections that are currently in place.

3.1 Equality Act

The UK Equality Act came into force in the UK on 1 October 2010 and amalgamated 116 separate pieces of legislation into one single Act[30]. The Act provides a legal framework to protect the rights of individuals and advance equality of opportunity for all. Under the Act, people are not allowed to discriminate, harass or victimise another person on the grounds of protected characteristics, defined as:

- age;
- disability;
- gender reassignment;
- marriage and civil partnership;
- pregnancy and maternity;
- race;
- religion and belief;
- sex; or
- sexual orientation.

The UK Equality and Human Rights Commission[31] is the regulatory body responsible for enforcing the Equality Act 2010. Their focus is on guidance, support and preventing discrimination. However, they have a range of powers for enforcement which are set out in Equality Act 2006. Under one of its Codes of Practice that became law in 2011, the Commission provides Core guidance. This

[30] UK Equality Act, https://www.gov.uk/guidance/equality-act-2010-guidance

[31] The UK Equality and Human Rights Commission https://www.equalityhumanrights.com/en/our-legal-action/our-powers

includes that a business must not treat you worse because of one or more of your protected characteristics (direct discrimination). The code also refers to indirect discrimination; a business cannot set standards for customers or clients which have a worse impact on people with a particular protected characteristic than on people who do not have that characteristic. If they discriminate, they need to make sure that they can objectively justify what they have done. There are some exceptions; a business can discriminate favourably for people with disabilities, or provide services for particular groups or where health and safety considerations apply to pregnant women.

3.2 Provision of Services Regulations 2009

The Provision of Services Regulations 2009[32] were enacted on 28 December 2009, giving effect to the EU Services Directive. The Directive and the Regulations impose obligations and requirements on all service providers which restrict discrimination between customers in the EU based on their place of residence. For example, the PSRs prevent online retailers from offering different terms for providing the same service to consumers on the basis that they live in different locations (either within the same country or in different countries), unless this can be justified objectively (such as based on additional costs due to distance travelled or technical characteristics of the services). The Regulations also imposes terms on information, which must be given or made available to all recipients.

3.3 Consumer Protection from Unfair Trading Regulations (CPRs)

The Consumer Protection from Unfair Trading Regulations (CPRs) prohibits unfair commercial practices which distort consumers' transactional decisions. The regulations specifically detail that if information which may affect a consumer's decision in relation to a product (a 'transactional decision'), such as the collection, use and transfer of customer information, or information about prices, is omitted, is false, or is misleading then the service provider is in breach of the CPRs[33].

3.4 General Data Protection Regulations

The General Data Protection Regulation (GDPR), regulation 2016/679 was brought into force 25th May 2016 and will come into effect from the 25th of May 2018[34]. The GDPR will replace the Data Protection Directive. The information that the GDPR applies to relates to personal data, particularly sensitive personal data[35].

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32 The provisions of service regulation 2009 http://www.legislation.gov.uk/uksi/2009/2999/pdfs/uksi_20092999_en.pdf

33 Consumer protection from unfair trading https://www.businesscompanion.info/printpdf/en/quick-guides/good-practice/consumer-protection-from-unfair-trading

34 Allen & Overy (2017) " The EU general data protection regulation": http://www.allenovery.com/SiteCollectionDocuments/Radical%20changes%20to%20European%20data%20protection%20legislation.pdf

35 The GDPR defines 'personal data' as any information relating to an identifiable person who can be directly or indirectly identified in particular by reference to an identifier such as a name, an identification number,

The new regulations will give consumers greater control over how their personal data is used by improving upon current legislation and are aimed to improve trust in the digital economy. This includes requiring that consumer consent to using their data is freely given, specific, informed and unambiguous. Default options (e.g. pre-ticked boxes) do not constitute unambiguous consent.

The GDPR applies to controllers and processors of data. A controller determines the purposes and means of processing personal data while the processor is responsible for processing personal data on behalf of a controller[36]. This applies to processing carried out by organisations operating within the EU and also applies to organisations outside the EU that offer goods or services to individuals within the EU. In the UK, despite the impending Brexit, the Queen's speech on the 21st of June 2017 confirmed that the General Data Protection Regulation will form part of UK law following the UK decision to leave the European Union[37].

3.5 Competition Act

If personalised pricing became widespread, then one concern is whether price discrimination could be used to foreclose competitors. For example, this could be done by personalised discounts and offering such low prices as to pre-empt entry into the market[38].

Consumers in the UK are protected from potential foreclosure such as this via the enforcement of the Competition Act 1998. The Competition Act gives wide powers of enforcement to the CMA and to the sector regulators, including the power to conduct inquiries and investigations into alleged preventions, restrictions or distortions of competition within the UK[39]. A review of the efficacy of the UK's competition regime and enforcement is outside the scope of this review.

3.6 Other applicable protections

There are two further sets of protections that are also applicable in this context:

- Under the **Unfair Terms in Consumer Contracts Regulations 1999,** (UTCCRs) the terms of use of a website, and any privacy policy applying to users of a website, may be contracts for the purposes of the UTCCRs. Terms that provide for how data will be collected and used are likely to be subject to the test of fairness under the UTCCRs.
- The **Advertising Standards Authority (ASA)** is the UK's regulator of advertising. It makes sure that ads across UK media adhere to the Advertising Codes, which include rules around the prevention of misleading advertising.

location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

36 Information Commissioner's office (2017) "Guide to the General Data Protection Regulation (GDPR) " https://ico.org.uk/media/for-organisations/guide-to-the-general-data-protection-regulation-gdpr-1-0.pdf

37 Berwin Leighton Paisner (2017) "GDPR and Brexit: UK Government unveils Data Protection plans " http://www.blplaw.com/expert-legal-insights/articles/gdpr-and-brexit-uk-government-unveils-data-protection-plans

38 Bourreau, B., de Streel, A., and Graef, I. (2017), *"Big Data and Competition Policy: Market power, personalised pricing and advertising"*

39 Whish, B. and Bailey, D. (2012), "*Competition Law*", Seventh Edition, Oxford Press.

3.7 Conclusions in relation to consumer protections

In summary, the above safeguards provide a wide coverage of protection to consumers, namely:

- **Equality Act:** prohibits discrimination based on protected characteristics such as age, disability, gender, race or religion.
- **Provision of Services Regulations:** restricts discrimination between customers in the EU based on their place of residence (either within the same country or in different countries).
- **General Data Protection Regulations:** provides protection to consumers in relation to the collection and processing of personal data.
- **Competition Act:** Protects consumers from various anti-competitive behaviours, including from potential foreclosure of competition.
- **Consumer Protection from Unfair Trading Regulations**: prohibits unfair commercial practices which distort consumers' transactional decisions.
- **Unfair Terms in Consumer Contracts Regulations 1999** provides protection to consumers against unfair terms in contracts for services, including the essential services covered in this paper.
- **Advertising Standards Agency** monitors advertising in the UK, including advertising of the services included in this report, to ensure that it adheres to the Advertising Codes. It therefore provides protection for consumers from advertising that could be viewed as misleading. For example, claims around 'discounts', 'free services' and the availability of products.

All of the above protections have responsible enforcement agencies to act on behalf of consumers.

With regards to personalised pricing, the first two safeguards therefore provide protection against forms of algorithmic pricing which either directly or indirectly target protected characteristics, as well as forms of algorithmic pricing based on geographical location, unless this can be justified by cost.

The Data Protection Regulations provide protection for customers around how their personal data is used by companies, including for algorithmic pricing. While the other safeguards provide protection around how products are advertised and sold to consumers, including restrictions around how companies advertise and provide information relating to the prices that are available to a particular customer.

4 POST

In this section, we apply our analytical framework to the postal sector. Here our review focusses on consumers as senders of mail. We provide:

- a short overview of the level of competition in the market and regulatory intervention;
- an outline of the current pricing structure in the sector;
- the future outlook of this pricing structure based on the available evidence;
- the potential welfare and distributional impact of this forward look; and
- recommendations for Citizens Advice.

4.1 Sector overview

Royal Mail is the UK postal sector's designated universal service provider. It is currently the only postal business in the UK which operates a network capable of delivering letters and parcels to addresses nationwide.

Level of competition in the market

With regards to competition faced by Royal Mail, competition from other letter service providers is limited. In general, there are two types of competition in the letters market:

- **Access competition** using Royal Mail's network.
  - Royal Mail is required to offer access at its Inward Mail Centres to other postal operators and customers for certain letter and large letter services with a routing time of two working days or later.
  - In 2016/17, this accounted for 61% of total letter volumes in the market.
  - The majority of access mail is bulk mail. However, in July 2017, Whistl and Parcel2Go launched a service allowing residential and small businesses to send letters, large letters and parcels via Whistl's access network.
- **End-to-end competition:** Although there is no nationwide end-to-end competitor to Royal Mail, there are several smaller scale end-to-end operators delivering in specific geographic areas. These operators generally offer lower prices than Royal Mail. They accounted for 0.1% of total letter volumes in the market in 2016/17.

On the other hand, there is evidence of greater competition in the parcels market. Ofcom lists 12 other major parcel operators providing UK-wide services[40]. Most of these offer services for residential customers, including:

- Royal Mail;
- The Alternative Parcels Company Limited;
- DHL International (UK) Limited;

[40] Ofcom - Annual monitoring update on the postal market: Financial year 2016-17 (November 2017) https://www.ofcom.org.uk/__data/assets/pdf_file/0019/108082/postal-annual-monitoring-report-2016-2017.pdf

- DPD Group UK Limited;
- Hermes Parcelnet Limited;
- TNT UK Limited; and
- UPS Limited.

In Ofcom's 2016 Review of Regulation, it concludes that Royal Mail currently maintains a strong position in the single piece parcels market, with 60-80% of single piece parcel volumes being sent through Royal Mail. However, this is much weaker for heavier single piece parcels[41].

Regulatory intervention in the market

Section 30 of the Postal Services Act 2011 ("the 2011 Act") sets out the minimum requirements that the Universal Service Provider must deliver[42]. As the 2011 Act transposes the universal postal service requirements of the EC Postal Directive 97/67/EC[43] (as amended in 2008), the legal scope for a change to this aspect of the primary legislation is currently limited, and could only be done by the UK Parliament.

UNIVERSAL SERVICE POSTAL SERVICE REQUIREMENTS

- At least one delivery of letters every Monday to Saturday to every address in the UK
- At least one collection of letters every Monday to Saturday from every access point in the UK that is used to receive letters and postal packets for onward transmission
- Postal services at an affordable, geographically uniform tariff across the UK
- A registered items service at an affordable public tariff
- An insured items service at an affordable public tariff
- A free-of-charge postal service to blind or partially sighted people
- Free carriage of legislative petitions and addresses
- Postal packets ≤20kg

In addition to these requirements, Royal Mail's 'Reported Business' is subject to further Ofcom regulation. This covers all universal postal services and all other services using the universal service network (i.e. retail bulk mail, access products and parcels). Prior to 2012, Royal Mail's 'Reported Business' was subject to an ex ante price control regime. In 2012, Ofcom replaced this ex ante regime with:

- **Safeguard price caps on second class stamp products (up to 2kg):** There are separate safeguard caps on:
  - Letters; and
  - Large Letters and Parcels.

41 Ofcom – Review of the Regulation of Royal Mail (May 2016) https://www.ofcom.org.uk/consultations-and-statements/category-1/royal-mail-review2016

42 https://www.legislation.gov.uk/ukpga/2011/5/section/31

43 http://ec.europa.eu/internal_market/post/doc/legislation/2008-06_en.pdf

The weighted average price under each of these caps is allowed to increase annually with CPI, and no more than 53% between 2012 and 2019.

- **a reliance on ex post regulation provided by competition law (informed by a monitoring regime):** Ofcom annually monitors:
  - the **prices of universal service products,** particularly any impact on vulnerable groups and those that rely on postal services;
  - the **quality of service** achieved by Royal Mail in the provision of universal services including speed of delivery, collection points served, delivery routes completed, accurate delivery; and
  - the **financial performance** and **efficiency** of the Reported Business.

In 2017, Ofcom conducted a review of this regulatory regime and concluded that the regime should remain in place until 2022. Maintaining the 'affordability cap' on the price of second class stamps was judged to be important so that vulnerable customers and those in rural areas can continue to access a basic universal postal service. The current safeguard caps are due to expire in March 2019. Ofcom will consult on the level of the 2019 to 2022 cap in the 2018/19 financial year, balancing its duties to protect vulnerable customers with those to ensure the financial sustainability of the universal postal service.

4.2 Current pricing structure

In setting letter prices, Royal Mail and other postal operators do not currently segment residential customers. Royal Mail offers first and second class stamped mail services for letters (up to 100g), offering one price point for each speed of delivery.

While in setting large letter and parcel prices, residential customers are segmented into a number of groups based on product and sender characteristics, namely:

- payment channel; and
- weight of postal item.

However, there are currently no personalised pricing practices.

Segmentation by payment channel

In March 2016, Royal Mail introduced a discount for parcel purchases via an online account. Use of this payment channel is generally 5-8p cheaper than postage bought at a Post Office for parcels weighing <2kg. A larger discount is offered for parcels weighing 2-5kg and no discounts for >5kg. It is likely that a proportion of this discount represents the reduced costs to Royal Mail in relation to the revenue collection aspect of the postal pipeline. However, without access to detailed information about Royal Mail's costs we are unable to estimate this proportion.

While business senders have the option of setting up an online account, residential customers are not given this option. Royal Mail therefore does not currently collect information on individual customers' sending behaviour in relation to volume or frequency.

In theory, there would be nothing stopping a customer from asking another customer to pay for the postage of a parcel on their behalf, and therefore availing of any discounts associated with sending online. For those who don't have access to this payment channel, ease and convenience are likely to be behavioural barriers to asking someone to use this payment channel on their behalf.

Segmentation by weight of postal item

Royal Mail and other postal operators also price Large Letters and Parcels by weight. Royal Mail offers first and second class stamped mail services for Large Letters (up to 750g), offering different prices for the 0-100g, 101-250g, 251-500g and 501-750g weight steps. For Parcels (up to 20kg), Royal Mail offers first and second class stamped mail services for small parcels 0-1kg and 1-2kg, and medium parcels 0-1kg, 1-2kg, 2-5kg, 5-10kg and 10-20kg. Historically, segmentation by weight of a postal item has been common practice for Royal Mail and other international postal operators, representing the cost differential between processing postal items of different weights. It is therefore unclear to what degree price discrimination is occurring through this segmentation.

In relation to Parcels, various providers in the market have also offered time limited price promotions for certain weight steps[44].

- From July to October 2017, Royal Mail reduced the cost of sending second class medium parcels weighing 2-5kg from £13.75 to £6.29 when postage was purchased via an online account.
- During the summer of 2017, Hermes implemented a £1 reduction in the price of sending a 2.5kg parcel.
- Additionally, in November 2017, Amazon offered free on-year Prime memberships to residents in the ten UK villages which have been the most frequent Amazon customers.

While a customer could split their package into multiple packages or combine packages to avail of lower prices associated with other weight steps, there is likely to be limited scope for savings. In relation to splitting a package, the discounts offered for a lower weight step are unlikely to outweigh the cost of multiple packages. In relation to combining packages, it is likely that this is already happening to some degree and it would be difficult for consumers to make further aggregations.

4.3 Future outlook

The potential for further segmentation of customers largely depends on the **payment channel** used. No customer data is currently collected for payment of mail through a Post Office or purchasing stamps from authorised outlets. Therefore, further segmentation for this customer group is not possible. For online payment of mail, further segmentation may be possible if customer data is collected in future.

[44] Ofcom - Annual monitoring update on the postal market: Financial year 2016-17 (November 2017) https://www.ofcom.org.uk/__data/assets/pdf_file/0019/108082/postal-annual-monitoring-report-2016-2017.pdf

Royal Mail do not currently require online users to register. However, offering online accounts for residential consumers would allow Royal Mail to collect more data on this customer segment in relation to:

- mailing profiles (including frequency of sending, average volume sent in a mailing, average weight of mail sent) and;
- other customer specific characteristics such as home address.

Any further customer segmentation of prices based on this additional data, is likely to take the form of discounts on list prices that are published for payment by post office/authorised stamp outlet.

The 2011 Act requires Royal Mail to offer universal postal services at a "geographically uniform tariff across the UK". Further segmentation of customers based on the **geographical location** of sender and receiver would therefore not be possible in future. In addition, it is unlikely that Royal Mail will **offer further segmentation by weight of letters**, as these are largely sent using pillar boxes and this option may therefore not be appealing due to potential complexities involved for Royal Mail in checking correct postage added.

4.3.1 Welfare and distribution impact

As the evidence suggests that there is currently no personalised pricing in the postal sector, we have considered the potential welfare and distributional impacts of hypothetical personalised pricing in the future.

On balance, the welfare impact of the possible future customer segmentation of parcels in the postal market is likely to be positive, including with the prospect of personalised pricing. There is likely to be little or no appropriation effect given the customer protections in place, and this is likely to be outweighed by a positive impact on competition, and possible positive impact on volumes. Based on the regulatory protections in place, we also believe that it is unlikely that further customer segmentation in the postal market would lead to negative distributional effects. All customers are protected through access to safeguarded tariffs and vulnerable customers are explicitly taken into account by Ofcom when considering the degree of ex ante price controls that are required.

While complexity will inevitably increase with further customer segmentation of prices, Royal Mail is likely to advertise the option of sharing data to avail of discounts, and the list prices will continue to be published. Increased consumer expectations in the parcels market are already driving innovation and investment. Further customer segmentation is therefore unlikely to damage consumer trust in the market.

Welfare impact

The 2011 Postal Act will continue to provide affordability and quality of service restrictions and the safeguard caps will remain in place for as long as Ofcom deems necessary. If Ofcom were to judge that the safeguard cap on Parcels should be removed, we would expect that an analysis of whether Royal Mail faces sufficient competitive pressure in the pricing of these prices would form an important part of the analysis. As highlighted above, we may be concerned if there

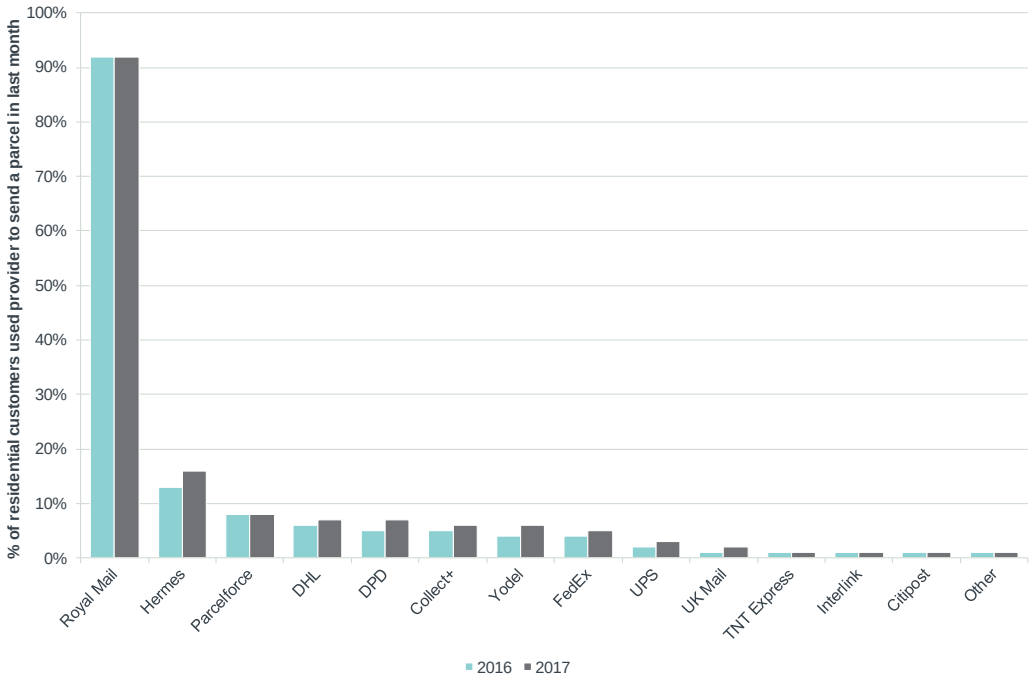
were significant differences between the use of alternative postal providers to Royal Mail across age groups or socio-economic groups. However, the current data suggests that this is not the case and that there has been no significant negative change in this in recent years.

As in the current situation, further discounts for parcel postage are likely to lead to increased volumes and an intensification of competition amongst providers.

Between 2015/16 and 2016/17, parcel volumes grew by 7%. The potential increase in targeted discounts offered to customers who pay for their postage online could contribute further to this increase. However, this effect would be hard to identify given the general trend of continued growth across the parcel sector due to increases in e-commerce, amongst other things.

Royal Mail is facing increased competition across all parcel weight steps. As set out previously, there are a number of price promotions being offered by other companies. Further targeted discounts may therefore contribute to an increase in the intensity of competitive pressure on all parcel operators in the market. The use of parcel operators other than Royal Mail has increased in recent years (as shown in Figure 6). However, it is important to interpret these statistics in the context of other factors, such as ability to meet the fasts paced evolution of customer demand in the market.

Figure 6 Use of UK parcel operators



Source: *Ofcom, Residential Postal Tracker*

Note: *QD5: Which of the following companies have you used to send parcels in the last month?*

Distribution impact

All universal service products (included parcel products) are subject to affordability and quality of service restrictions through the 2011 Postal Act, with a safeguard cap on standard second-class products up to 2kg until at least 2022.

Affordability

As required by the 2011 Postal Act, Royal Mail must provide all universal service products at affordable prices. As such, Ofcom's monitoring regime considers the ongoing affordability of universal postal services (including large letters and parcels) for residential customers, with a particular focus on vulnerable customer groups[45]. In line with Ofcom's obligations under the Communications Act 2003, its approach is particularly focussed on the following customer groups[46]:

- those with low income;
- those living in rural areas (as they may have a higher reliance on post); and
- other consumers who may be particularly reliant on postal services, e.g. those aged over 65, or those who have a disability, or have no or limited access to the internet, or recent immigrants to the UK.

In its latest annual monitoring report, for the 2016/17 financial year[47], Ofcom stated that they consider that universal service products are currently affordable for most residential consumers, in line with the findings of its March 2013 report.

Only 10% of residential customers responding to Ofcom's 2017 residential postal tracker arranged postage online, and this was slightly higher for socio-economic group AB (12%) compared to group DE (8%). As expected, this figure is lower amongst over 65s, which is likely to be explained by the low rates of internet take up amongst this age group.

Safeguard cap

The safeguard cap covers all standard second class small parcels and medium parcels up to 2kg. All customers have access to these safeguarded products. Given the substitutability between second and first-class mail, this price regulation also acts as a benchmark for Royal Mail's pricing of first class mail products. While there is the potential for some rebalancing under the cap between online and post office payment for parcels, this is limited by the level of the cap.

In setting the safeguard price caps in 2012, Ofcom stated that *"while imposing a price cap on packets up to 20kg would be comprehensive, it would be unlikely to be proportionate given the very low usage of these weight steps by vulnerable consumers and the level of competition for these weight steps.[48]"* Further, there is no significant difference in the use of alternative postal providers to Royal Mail across age groups or socio-economic groups (as shown in Figure 7). This suggests that vulnerable consumers of parcels >2kg are not necessarily currently at a disadvantage with regards to alternatives to Royal Mail products. We would not expect this finding to change significantly in future.

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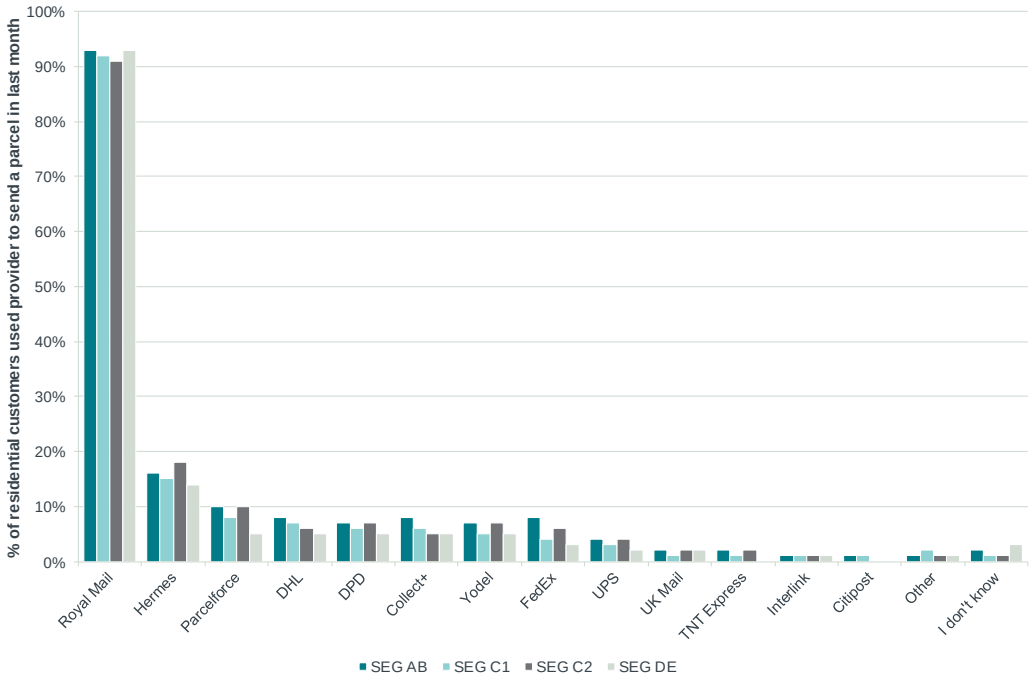
45 In March 2013, Ofcom published a report setting out its assessment of the current affordability situation at that time. Since then, Ofcom has monitored affordability of universal postal services through responses to questions in its postal trackers surveys and through reviewing Office for National Statistics (ONS) data.

46 Ofcom, The affordability of universal postal services, 19 March 2013, https://www.ofcom.org.uk/__data/assets/pdf_file/0014/10445/affordability.pdf

47 Ofcom, Annual monitoring update on the postal market: Financial year 2016/17, 23 November 2017, https://www.ofcom.org.uk/__data/assets/pdf_file/0019/108082/postal-annual-monitoring-report-2016-2017.pdf

48 Ofcom, Securing the Universal Postal Service, Decision on the new regulatory framework, 27 March 2012, http://stakeholders.ofcom.org.uk/consultations/review-of-regulatory-conditions/statement/

Figure 7 Use of alternative postal providers across customer groups 2017



Source: *Ofcom, Residential Postal Tracker*

Note: *QD5: Which of the following companies have you used to send parcels in the last month?*

4.4 Conclusions and recommendations

This chapter has outlined the application of our analytical framework to the postal industry. We conclude that the welfare impact of potential future customer segmentation practices in the parcel markets is likely to be positive, if anything. Equally, we have no specific concerns relating to the distributional impact.

As outlined, Ofcom will consult on the level of the 2019 to 2022 safeguard caps in the 2018/19 financial year. During this consultation process, we would recommend Citizens Advice to assess Ofcom's proposals, particularly for the level of the cap on parcel prices, to ensure that Royal Mail's customer segmentation by payment channel has been considered. It is also important that Ofcom takes a forward look and considers the potential evolution of customer segmentation in the setting of these caps.

5 TELECOMS

In this section, we apply our analytical framework to the telecommunications sector. We provide:

- a short overview of the market structure and regulatory intervention in the market;
- an outline of the current pricing structure in the sector;
- the future outlook of this pricing structure based on the available evidence;
- the potential welfare and distributional impact of this forward look; and
- our recommendations for Citizens Advice.

5.1 Sector overview

We consider three key segments of the Telecoms sector, namely:

- fixed line phone;
- mobile phone; and
- fixed line broadband.

This section outlines the market structure and regulatory intervention in each of these sectors.

Market structure

Fixed line phone

Communications providers can compete with BT to deliver residential fixed phone services using wholesale line rental ("WLR")[49]. This is a regulated wholesale service provided by BT which allows other communication providers to offer telephone line access. All providers in the market use the BT network, apart from Virgin who use their own cable network.

BT's overall share of residential phone lines fell from 57% in Q4 2009 to 36% in Q4 2016. However, BT's share is much higher amongst fixed voice-only services (i.e. those not purchased as part of a bundle), as shown in Figure 8.

Figure 8 Percentage of voice-only lines by provider

Provider	Market share
BT	68%
Post Office	10-20%
TalkTalk	<10%
SSE	<5%
Virgin Media	<5%
Sky	<1%
Phone Co-op	<1%

Source: Ofcom (26 October 2017) – Evidence supporting the review of the market for standalone landline telephone services – Table 1.10. Shares of lines to voice-only lines by CP (in ranges) – Q1 2017

[49] BT has been required to provide WLR to competing providers since 2002.

Mobile phone

On the mobile side, there are four licensed mobile network operators (MNOs) in the UK, and at least 40 mobile virtual network operators (MVNOs). In September 2017, O2 UK had the largest number of subscribers out of the four UK licensed mobile network operators, as illustrated in Figure 9.

Figure 9 Mobile market share by MNO

Provider	Number of national subscribers	Market share
O2 UK	32,854,667	35.7%
EE	27,251,000	29.6%
Vodafone	19,569,667	21.3%
Three	12,275,000	13.3%

Source: TeleGeography

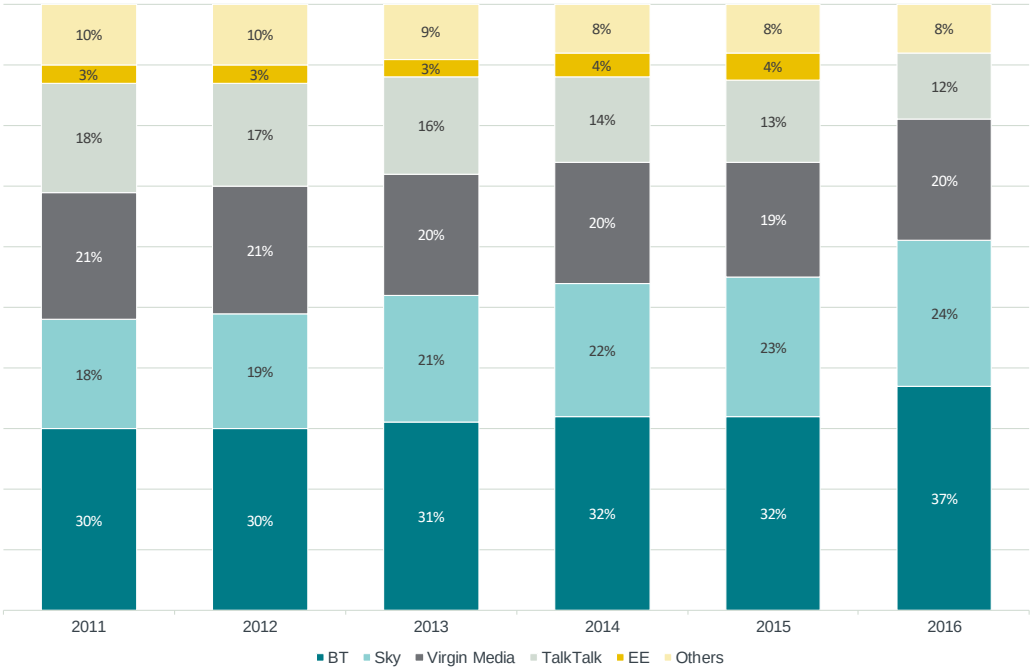
MVNOs can obtain wholesale access to the network of any of the licensed mobile network operators. There are no current statistics publicly available on the exact number of MVNOs or their subscriber numbers.

Fixed line broadband

With regards to fixed line broadband services, there are four main providers, and a large number of smaller providers.

Both BT and Virgin have their own national networks. Operators such as Sky, TalkTalk and SSE deploy their own network access equipment in BT exchanges via a process known as local loop unbundling (LLU). A number of smaller operators, such as Gigaclear and Hyperoptic, are also developing their own fibre optic broadband networks across certain geographic areas. In 2016, BT's retail market share was 37% and Sky's share was 24%, as shown in Figure 10. BT's share has grown in recent years from 30% in 2012.

Figure 10 Fixed line broadband retail market shares by provider 2011-2016



Source: *Ofcom, Communications Market Report, 3 August 2017*

Note: *BT and EE are shown separately up to 2015 as the merger between these two organisations was not completed until 2016.*

Regulatory intervention in the market

Ofcom is the communications regulator in the UK. It operates under a number of Acts of Parliament and other legislation, including the Communications Act 2003, and must act within the powers and duties set for it. The Communications Act sets out Ofcom's principal duty as furthering *"the interests of citizens and of consumers, where appropriate by promoting competition"*[50].

Ofcom also implements the Universal Service Order (USO) through specific conditions on the Universal Service Providers in the UK, namely:

- BT (outside of Hull); and
- Kingston Communications (in Hull).

The USO specifies the services which must be provided throughout the UK. In doing so, it ensures that basic fixed-line services are available at an affordable price to all citizens across the UK, as outlined below.

[50] https://www.ofcom.org.uk/about-ofcom/what-is-ofcom

UNIVERSAL SERVICE ORDER[51]

Under the universal service obligations, BT and Kingston Communications must provide a range of services including:

- special tariff schemes for low income customers;
- a connection to the fixed network, which includes 'functional internet access' (i.e. narrowband);
- reasonable geographic access to public call boxes; and
- the provision of a text relay service for customers with hearing impairment.

UK fixed and mobile communication service providers are not subject to retail price regulation.

In 2006, Ofcom removed the retail price controls from the market that had been in place since BT was privatised in 1984. As part of its market analysis which supported this decision, Ofcom concluded that the USO would be sufficient to protect specific consumer groups[52]. In particular, through the "special tariff scheme", which the USO ensures is retained. This tariff scheme was then known as the Light User Scheme (LUS), but was replaced by BT Basic in 2008 (described further below). Ofcom also concluded that vulnerable customers would have choice in a competitive market.

BT BASIC[53]

The BT Basic service offers discounted connection and calling rates to customers who are collecting certain state benefits[54]. It costs £5.10 (including VAT) per month for line rental, with a call allowance up to £1.50 and a monthly cap of £10 in call allowance charges.

The BT Basic Bundle offers the same group of customers a combined BT Basic line and broadband bundle which costs £9.50/month, including 12GB usage.

In 2009, Ofcom removed the remaining market regulation. It reported that ease of competitive entry, lack of barriers to growth, access to wholesale services and customer awareness of choice, had substantially changed the nature of retail competition in these markets between 2006 and 2009[55]. Ofcom concluded that BT no longer had significant market power in the market. As such, it removed one of the last pieces of regulation in the market by allowing BT to offer bundled services in a discounted package, e.g. broadband and landline together. Ofcom was of the view that the continued safeguard regulation of BT in relation to bundled services was not in the best interests of the consumers since it was constraining

[51] https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-authorisation-regime/universal-service-obligation

[52] Ofcom (2006) " Retail price control explanatory statement" https://www.ofcom.org.uk/__data/assets/pdf_file/0012/42114/rpcstatement.pdf

[53] https://btplc.com/inclusion/ProductsAndServices/BTBasic/Overview/index.htm

[54] Income support, income-based Jobseeker's Allowance, Pensions Credit, Employment and Support Allowance or zero-earnings Universal Credit.

[55] Ofcom (2009), Fixed Narrowband Retail Services Markets - https://www.ofcom.org.uk/__data/assets/pdf_file/0023/51836/statement.pdf

competition. It also highlighted that BT's competitors may have so far benefited from the apparent restrictions on BT's ability to compete in retail markets.

Although no fixed and mobile communication service providers are subject to retail price regulation, since 2017, BT has been subject to a voluntary price commitment in relation to standalone fixed phone services. This relates to just under 9% of customers with fixed phone lines.

Tariff data, provided by Pure Pricing to Ofcom, shows that line rental prices increased by 34% in real terms in the decade to December 2016, despite declining wholesale costs (31% decline over the same period)[56]. Based on this observation and growing concern around the limited competition in this market segment, Ofcom conducted a review into the market for standalone landline telephone services in 2017[57].

Ofcom found that there are two types of customers of voice-only services:

- **customers who buy only standalone fixed voice (SFV) services** (voice only telephone without broadband); and
- **split purchasers** (those who buy other services, but not as a bundle).

It found that vulnerable customers are over-represented in the first group, with over 40% aged 75 or older and 40% living in socio-economic group DE households. On the other hand, customers in the second group tend to be younger, of higher socioeconomic status and more technologically literate.

Overall, it was found that there is evidence of a lack of engagement across both customer groups. However, engagement amongst split purchasers was found to be 15% higher than those purchasing standalone fixed voice services. In 2016, Ofcom consumer research found that the majority of standalone fixed voice customers (71%) had never switched provider, compared to 55% of all landline users[58]. Further, this customer group were also found to be most dependent on others to guide decision-making about home services.

Ofcom also concluded that BT has significant market power in this market, with almost 80% of landline only customers in the UK. It highlighted that this had been to the detriment of standalone fixed voice customers, and that BT had been able to act as a price leader, in that when they have increased their prices, so have other providers in the market.

There was also a concern that although there was currently no price discrimination between the two customer groups highlighted above, that this was possible, to the potential detriment of standalone fixed voice customers. As a result, Ofcom proposed to impose retail price regulation on BT in relation to this customer group. In October 2017, following discussions with Ofcom, BT published their voluntary commitment to accept the following proposals for a three-year period in respect of its standalone fixed voice customers:

[56] Ofcom (2017), Pricing trends for communication services in the UK, Page 14

[57] Ofcom (2017), Consultation-Review-of-the-market-for-standalone-landline-telephone-services, https://www.ofcom.org.uk/__data/assets/pdf_file/0030/97806/Consultation-Review-of-the-market-for-standalone-landline-telephone-services.pdf

[58] Ofcom, Switching Tracker 2016

- a line rental price reduction of £7 per month (inclusive of VAT) effective from April 2018;
- raising the prices of calls and line rental by no more than inflation (CPI) each year;
- provision of reporting information to allow Ofcom to monitor its compliance with the voluntary undertaking; and
- a commitment to improve the information available to ensure voice-only customers are aware of possible savings available to them in this market.

BT also agreed to spread out future price increases for these customers and agreed to work with Ofcom in the future to improve customers' engagement with the market.

5.2 Current pricing structure

Overall, we have not found any evidence to suggest that providers of essential services in the UK telecommunications market are implementing any personalised pricing. The current pricing structure is likely, to some extent, to reflect the different cost to serve customers with different usage patterns. It may also include an element of price discrimination. However, the information is not publicly available to allow one to separate out these two effects.

At a high level, providers separate their product offering between consumers buying standalone services and those buying bundles, with fixed line broadband normally being bundled with other products.

Suppliers' tariff offerings do currently reflect some customer segmentation across:

- **mobile phone services**; and
- **bundled services** (fixed line phone and broadband services, or bundled fixed line phone, mobile phone and broadband services).

Across both types of services, tariffs are segmented based on length of contract. There is then service type specific segmentation, as outlined below.

Mobile phone services

Within mobile phone services, providers offer two products on the basis of **payment method**:

- Pre-pay ("Pay as you go"); and
- Post-pay ("Pay monthly").

Within each type of product, tariff offerings reflect further customer segmentation, as outlined below.

Pre-pay ("Pay as you go")

Mobile phone service providers also offer optional 'add on' packs for customers who pay in advance for their mobile **usage**. For a fixed additional cost, customers can purchase bundles of data, minutes and texts that last up to 30 days.

Post-pay ("Pay monthly")

Like with pre-pay customers, post-pay customers are also further segmented based on **usage patterns**. With providers offering different packages of data, minutes, and texts for consumers to sign up to for a fixed monthly price as part of their contract. Providers then offer separate prices for 'out of contract' usage.

New variations of these contracts are developing in the market to reflect changing demands. For example:

- data only packages;
- zero-rated packages, e.g. including free Netflix usage;
- basic vs. advanced packages with additional features such as personal hotspot allowances; and
- packages that allow for the roll-over of data allowances from month-to-month in the form of discounts for unused data.

In addition, post-pay customers are also offered the option of signing up to **a SIM only contract or a contract with an inclusive handset**. The higher price of the latter reflects the cost of the included handset.

Bundles

Providers of fixed and mobile communication services also offer bundles of products. Bundled services offer several products or services together in a single package. They are generally sold at a lower price than would be charged if the items were sold separately. In 2017, 88% of households bought at least two of their communication services in a bundle. Providers also offer bundles containing paid TV services as well as essential telecommunication services. This also influences the prices offered for the overall bundle.

Again, customers are further segmented based on **usage patterns** with providers offering different permutations of bundles based on usage across each of the elements within the bundle. Like with post-pay mobile, providers will charge separately for 'out of bundle' usage.

In addition, the use of deep **promotional or retention discounts** by providers appears to be a well-established practice[59]. These tend to be targeted at those buying bundled services (although they are also used for other tariff offerings, such as mobile). Given that a customer's current provider holds more information on their behaviour in relation to communication services, retention discounting is the pricing practice that is likely to be closest to personalised pricing. However, we have not seen any evidence to suggest that this pricing practice reflects this level of sophistication. Although these types of discounts are most widely seen in relation to bundled products, they are also a feature of post-pay mobile services.

[59] Ofcom, Pricing trends for communication services in the UK (15 March 2017)

5.3 Future outlook

Given that the evidence suggests that personalised pricing is not currently in place in the telecoms sector, we have also considered the future outlook for the sector in relation to personalised pricing strategies or offers. Telecoms, in particular, is a dynamic market, with an evolving technological and competitive landscape. Therefore, any forward look requires a degree of speculation.

With regards to **standalone fixed voice only services**, there is currently no review scheduled by Ofcom for BT's voluntary commitment (other than Ofcom's annual monitoring process). We therefore wouldn't expect this to be removed, unless there was a significant change in competitive conditions in this market segment. Further, the BT basic tariff is also available for these customers to sign up to. BT, DWP, Citizens Advice and other consumer organisations, such as Age UK, are working to raise awareness of this tariff. Moreover, it is unclear that this segment of the market is a likely candidate for personalised pricing given the lack of detailed consumer data available to allow individualised pricing.

With regards to **mobile services**, we would expect to see the trend towards more sophisticated tariff offerings continue, reflecting the evolving usage patterns in this segment of the market. Further down the line, if soft SIMs[60] (or similar) are rolled out, this would allow movement between providers more easily and we could see new tariff offerings that reflect this.

Further growth in the number of **bundles** available in the market is also likely, particularly in relation to cross-utility bundling, a trend which has already started to develop.

As usage patterns are increasingly analysed with more sophistication, and bundling grows, we would expect that the amount of customer data that becomes available will increase. In theory, this potential for additional insight may further drive the growing use of discounting by providers, such as retention deals[61] or bundles. In this context, if personalised pricing were to develop in this market, we would expect that it might be most likely in relation to the existing promotional discounting behaviour ('personalised discounting').

These potential developments in the market could occur against a backdrop of Ofcom driven changes in relation to how customers engage with the communications market. Ofcom launched an open consultation in 2017 as part of its review of this topic. There were two potential issues which Ofcom were seeking views on:

1. A lack of customer awareness around when contracts end.
2. A lack of customer understanding around actual usage of communication services.

Since summer 2017, Ofcom has been in the process of conducting consumer research into customer engagement, with a focus on the above issues. It aims to publish a further document showing the progress of its work in spring 2018.

[60] A soft SIM (software SIMs) is one that is part of the device, i.e. there is no physical SIM. This can be reprogrammed to another provider rather than physically being swapped.

[61] Retention deals are typically made towards those considered at risk of switching.

5.3.1 Welfare and distribution impact

Welfare impact

As discussed in the section above, there is currently little evidence to suggest that personalised pricing in the telecoms sector is currently in place. We therefore consider the potential welfare implications of hypothetical personalised pricing scenarios.

As highlighted, if personalised pricing were to develop in this market, we would expect this might be in the form of further discounting behaviour against list prices. This could be either through retention discounts, or individualised bundling. Both pricing strategies would suggest lower prices to those consumers that avail of personalised pricing, rather than higher.

Of course, there may yet be other personalised pricing strategies in the future that could have different effects. Our framework set out above provides a guide to assessing the potential impact of such pricing strategies.

- **Appropriation effect**: Whether personalised pricing strategies could negatively impact welfare will depend on firms' ability to set prices above non-personalised levels. This in turn is impacted by a number of factors, as outlined below.
  - Sensitivity of demand to prices: If firms set personalised prices above non-personalised levels, consumers may switch providers. Given current competition in the market, we consider that most consumers in the future would have the option to switch providers.
  - Ability for consumers to opt out: If telecom consumers can opt out of future personalised pricing strategies, this will reduce the prospect of higher prices. Transparency that personalised pricing is taking place would increase the likelihood that consumers might opt out.
  - Potential for adverse consumer reaction: If consumers consider they are being charged higher prices for the same product, then this would likely provoke negative reaction, decreasing the likelihood of such strategies being implemented. In telecoms, however, where there is greater scope for personalised product offerings – through add-ons, bundles, quality, etc. – it is less clear that consumers would be able to easily tell if they are paying higher prices than other people.
  - Consumer protections: As discussed above, there are existing consumer protections in place in the telecoms sector, and there is no evidence to suggest that this will likely change in the future. However, services that are considered essential may change in the future, which may consequentially impact on future regulatory requirements.
- **Output effect**: Given the uncertainty in how pricing strategies will develop, it is difficult to speculate on the output effect of personalised pricing. However, in the telecoms sector, it is informative to consider the impact of previous price discrimination. Empirical evidence suggests that increased tariff diversity, through second degree price discrimination, has previously led to increased

broadband adoption rates[62]. This suggests that second degree price discrimination in the past has had positive welfare effects. On the one hand, this could be analogous to future personalised price discrimination in that tailored prices and quality to individual needs may also increase future output in the sector. On the other hand, broadband take-up rates are now already high in the UK (82% had fixed broadband in 2017, compared to 79% in 2016[63]), which may suggest that future personalised pricing in the form of bespoke pricing-quality offers may have limited overall impact on take-up or output.

- **Intensifying competition effect**: Given the uncertainty in to how pricing strategies will develop, it is difficult to speculate on the competition effect of personalised pricing. Like the output effect, it appears as though previous second degree price discrimination in the sector has intensified competition, as providers competed more aggressively for different segments of consumers compared to a counterfactual where second-degree price discrimination was not evident.

  In addition, it is likely that in the future, further bundles of products will be introduced. This may include cross-utility products, such as the bundling of telecom and energy products. Bundling more products may in turn give firms access to more in-depth consumer information, which may give rise to the prospect of personalised pricing across multiple products. Again, such bundling discounts are likely to result in lower consumer prices at the point of sale. The ability for firms to use such bundled discounts to foreclose competition is restricted by the enforcement of the Competition Act, which forbids the abuse of a dominant position.

Distributional impact

Ofcom has highlighted a number of consumer engagement concerns that currently affect the distributional impact of prices. In theory, this could be exacerbated by the conceivable future developments for prices outlined above (including personalised pricing). In practice, a number of regulatory initiatives may fall out of Ofcom's consumer engagement review that lessen (or remove) this impact. Given the current status of this review, it is not possible to speculate what these initiatives could be at this stage, or the impact they may have. In this section, we therefore comment on the potential distributional impact, or potential pricing developments under the status quo situation.

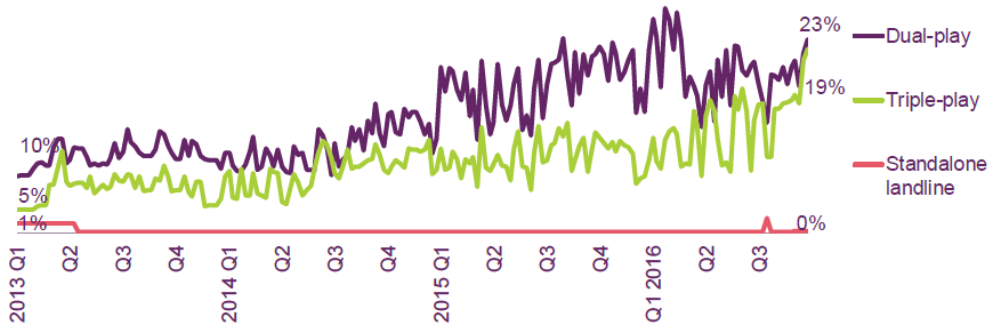
Growing gap between list prices for bundles and promotional prices

Analysis of Simplify Digital's data illustrates a growing gap between 'list prices' for bundles, and promotional prices available to new or upgrading customers (as shown in Figure 11). Standard bundle prices have increased, while those including discounts have remained flat or fallen. This means that customers can pay significantly lower prices for broadly similar services. This trend is likely to be mirrored in the expected increase in bundling. If personalised pricing is introduced, then this gap may increase even further.

[62] Düsseldorf Institute for Competition Economics, Tariff Diversity and Competition Policy – Drivers for Broadband Adoption in the European Union, July 2017

[63] Ofcom, Technology Tracker

Figure 11 Average promotional depth, by type of service: Q1 2013 to Q3 2016



Source: *Ofcom analysis of Simplify Digital – Ofcom, Pricing trends for communication services in the UK (15 March 2017)*

Note: *Dual-play and Triple-play services refer to the number of services including in the bundle*

There are two main customer groups who could be negatively affected:

- disengaged customers; and
- engaged customers who face barriers to switching.

Disengaged customers generally do not benefit from promotional discounts and pay the higher list prices. In particular, customers may not be aware of when they should be reviewing their existing deal and shopping around for a new one. As a result, they can find themselves on "roll over" contracts or passive subscriptions. At the same time, it is important to recognise that being on these types of contracts may not always signal disengagement. Two respondents[64] to Ofcom's initial consultation on consumer engagement highlighted that consumers may value the flexibility of remaining out of contract, be waiting for new options, or choose to remain on their existing tariff because it offers services or bundles which are no longer available for new customers.

In addition, some more engaged customers may be negatively affected due to the existence of barriers to switching. Ofcom's consumer engagement consultation document highlighted the following barriers, which were echoed in the consultation responses:

- the practice of different contract periods within a bundle, for products that are intrinsically linked, e.g. 18-month line rental, but 12-month broadband contract;
- the practice of locking mobile handsets to a particular mobile network; and
- early termination charges.

However, switching data collected by Ofcom does not suggest that there is any significant variation in switching patterns by either age or socio-economic group, as illustrated in Figure 12 and Figure 13. The data in Figure 12 suggests that older consumers are less likely to switch, or consider switching providers of bundled products.

[64] https://www.ofcom.org.uk/__data/assets/pdf_file/0022/108445/UKCTA.pdf
https://www.ofcom.org.uk/__data/assets/pdf_file/0021/108444/Three.pdf

Figure 12 Mobile phone customers, activity in the last 12 months (2017)

	Total	Age					SEG			
		16-24	25-44	45-64	65-74	75+	AB	C1	C2	DE
Changed provider in last 12 months	9%	12%	8%	9%	11%	--	10%	9%	9%	10%
Made changes to service in last 12 months	23%	21%	24%	23%	25%	--	25%	23%	23%	20%
Neither of these	68%	67%	68%	68%	64%	--	65%	69%	68%	70%

Source: Ofcom, Switching Tracker 2017

Figure 13 Bundled service customers, activity in the last 12 months (2017)

	Total	Age					SEG			
		16-24	25-44	45-64	65-74	75+	AB	C1	C2	DE
Changed provider in last 12 months	15%		16%	15%	11%	12%	12%	15%	17%	17%
Actively looking at the moment	5%		5%	5%	2%	3%	6%	5%	6%	1%
Actively started looking in the last 12 months, not switched	7%		9%	7%	6%		9%	8%	5%	7%
Considered changing without actively looking in last 12 months, not switched	7%		6%	7%	10%	4%	7%	7%	6%	6%
None of these	66%		64%	66%	72%	81%	66%	65%	66%	68%

Source: Ofcom, Switching Tracker 2017

Increased complexity

An increase in the number and content of bundles also brings the issue of increased complexity in the market (potentially worsening the level of engagement amongst some consumers). Some steps have recently been taken by Ofcom to reduce complexity. For example, working with the Advertising Standard Agency to develop new guidelines to aid consumers in comparing broadband services[65]. Although these measures are likely to help the situation, the issue remains. Further, it is likely to be amplified for customer groups exhibiting certain vulnerability factors, such as mental health issues, disabilities or being elderly. However, the experience in the Energy sector tells a cautionary tale regarding regulatory intervention in the number of tariffs offered. As set out in more detail in the next chapter, following Ofgem's retail market review, it imposed restrictions on

[65] In advertising bundles, providers can no longer separate out line rental charges, and must include all-inclusive up front monthly costs.

the number of a tariffs a supplier could offer. The CMA's market investigation found that this action had dampened competition and recommended that these restrictions be removed.

In this context, the problems created by complexity are likely to be worsened where customers are unsure of their own usage patterns. In these situations, customers may either unintentionally select a plan that has too much included, or a plan that has too little and face 'out-of-contract' costs. In particular, research suggests that a large proportion of consumers are currently purchasing more than they need to as part of their mobile contracts[66]. However, some of this behaviour may be intentional to ensure certainty over monthly payments and avoid 'bill shock'.

5.4 Conclusions and recommendations

The evidence suggests that personalised pricing is not currently in place in the telecoms sector. In this chapter, we have therefore also considered the future outlook for the sector in relation to personalised pricing strategies or offers. Any forward look, however, requires a degree of speculation.

Going forward, if personalised pricing were to develop, it would be most likely to be in the form of personalised discounting from the prevailing list prices for those availing of personalised pricing, a natural evolution from the promotional discounts already prevalent, particularly in relation to bundling. In turn, if personalised pricing leads to positive welfare effects then this implies that the average price in the market would also decrease.

As seen in relation to current discounting practices, future personalised pricing may have a distributional impact. A number of the potential issues are already the focus of Ofcom's current consumer engagement review. If Ofcom could successfully implement solutions, the distributional impact could be significantly dampened.

A key challenge in the telecommunications sector is its constantly evolving nature, driven by demand and supply side changes in the market. It is therefore crucial that any regulatory or political interventions in the market take this into account. If not, a 'remedy' for an existing 'issue' may create unintended consequences that either have a negative impact on welfare through a reduction in competition, for example, or simply shift the distributional impact from one vulnerable customer group to another.

We therefore recommend that Citizens Advice keeps a close watching brief on the developments of Ofcom's consumer engagement review. It should ensure that particular attention is paid to the bundled prices and the complexity of pricing that may exacerbate the distributional impact of any potential future pricing strategies across the sector.

In relation to complexity, we would recommend that Citizens Advice also monitors the development of companies or tools that are designed to put more power in consumers' hands by combining price, quality and usage data in assisting consumers to make transactional decisions in the sector.

[66] https://www.ofcom.org.uk/__data/assets/pdf_file/0018/108450/Which.pdf

6 ENERGY

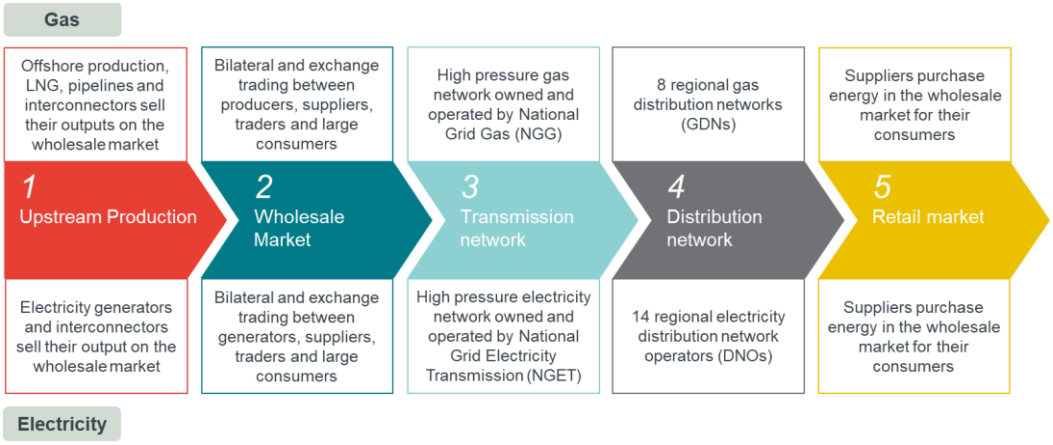
In this section, we apply our analytical framework to the energy sector. We provide:

- a short overview of the market structure and key regulatory and political changes in the sector in the last five years;
- an outline of the current pricing structure in the sector;
- the future outlook of this pricing structure based on the available evidence;
- the potential welfare and distributional impact of this forward look; and
- our recommendations for Citizens Advice.

6.1 Sector overview

There are five main aspects of the energy supply chain, as illustrated in Figure 14. The transmission and distribution network businesses are natural monopolies and are regulated by Ofgem through price controls. The gas and electricity retail markets, on the other hand, are open to competition[67]. Suppliers are generally required to have a supply licence. Ofgem can amend the conditions of this license and take enforcement action if required. Suppliers must also comply with consumer protection obligations. For example, guidelines relating to marketing and sales.

Figure 14 Energy supply chain

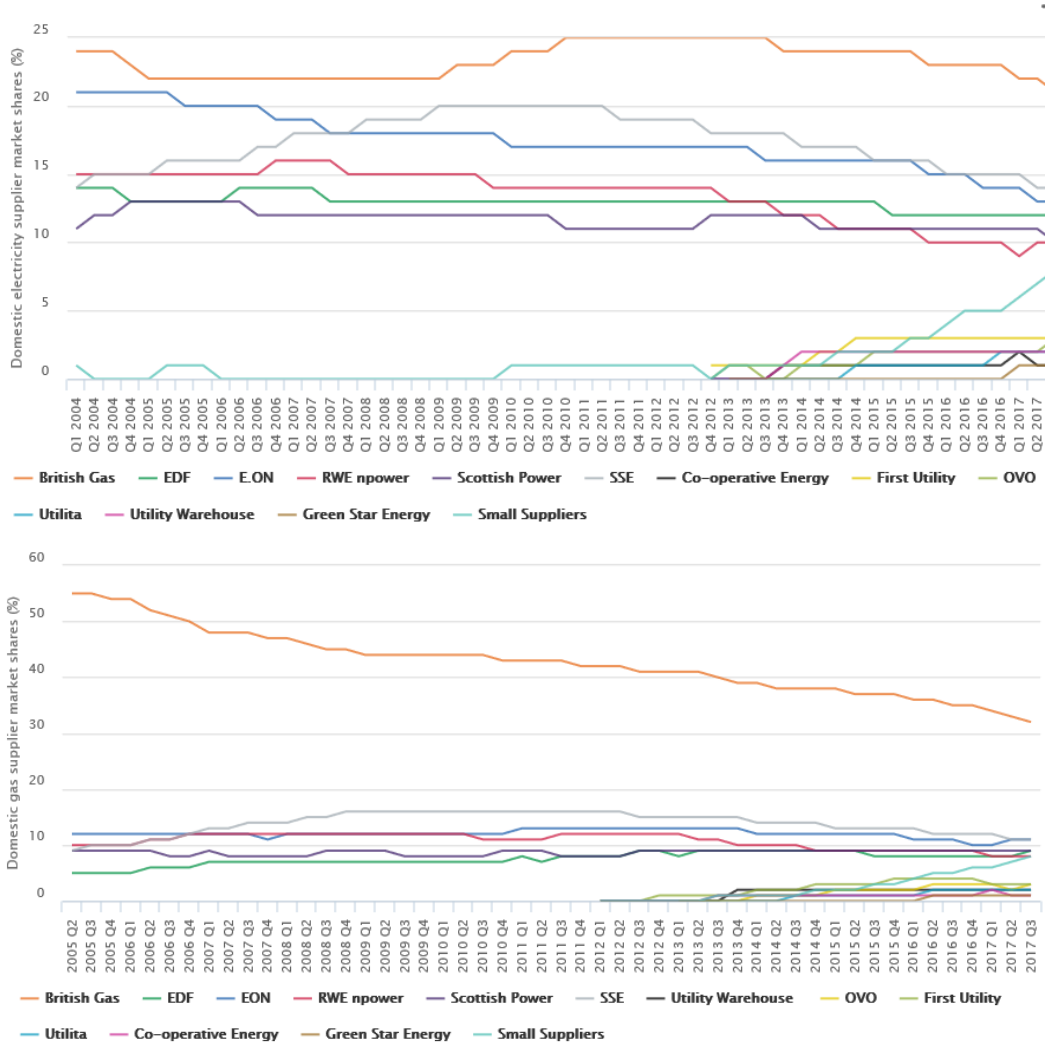


Source: https://www.ofgem.gov.uk/sites/default/files/docs/2013/12/assessment_framework_18_dec_final.pdf

There are a large number of energy suppliers in the retail market. As shown in Figure 15, six companies have held the largest market share over time. Though recently these market shares have been eroded somewhat as the 'mid-tier' companies, such as Utility Warehouse, First Utility and Ovo have grown and an increasing number of smaller suppliers have entered the market. In 2013, the market share of small and medium sized suppliers was 4.7% of consumers for electricity and 5% for gas. By December 2017, this had increased to 21% for electricity and 22% for gas.

[67] Full liberalisation of the energy markets happened in 2002.

Figure 15 Energy retail market shares Q1 2004 to Q2 2017



Source: Source: Ofgem analysis of electricity distribution network operator reports and Ofgem analysis of Xoserve reports. Information correct as of: January 2018
https://www.ofgem.gov.uk/data-portal/retail-market-indicators

Key regulatory and political changes in the sector in the last 5 years

To add further context to the application of our analytical framework to the Energy sector, it is essential to consider the key regulatory and political changes that have occurred in the sector over the last 5 years. Along with the impact, or expected impact, of these changes. This section provides an overview of:

- the Government's smart meter rollout programme;
- the Competition and Market Authority (CMA) market investigation;
- Ofgem's subsequent 'State of the Market' annual reports; and
- the Government's Draft Energy Cap Bill.

Smart meter rollout

The Government requires every energy supplier in England, Wales and Scotland to have offered its customers a smart meter by 2020. *"[It] believes that every home in Great Britain should have smart energy meters, giving people far better*

information about and control over their energy consumption than today. Businesses and public sector users should also have smart or advanced energy metering suited to their needs. The rollout of smart meters will play an important role in Britain's transition to a low-carbon economy, and help us meet some of the long-term challenges we face in ensuring an affordable, secure and sustainable energy supply.[68]*"* In its latest update to the full economic assessment of the smart meter roll out, BEIS estimates that the roll out will result in a positive net benefit (present value) of £5,746m[69].

Smart meters will deliver much improved data on energy usage to both consumers and suppliers, therefore providing a number of benefits.

- **Consumers:** Smart meters show consumers exactly how much energy they're using and what it's costing, in near-real time. They also send accurate meter readings to your energy supplier, removing the need for estimated bills or manual meter readings.
- **Suppliers:** Smart meters allow suppliers to:
  - deliver improved customer service;
  - enhance the potential for innovative new services and tariffs; and
  - deliver cost savings for industry (and ultimately consumers).
- **Wider benefits:** An essential enabler for a move to a low carbon energy system and more active management of energy networks.

CMA market investigation

In June 2016, the CMA published its final report containing the decisions and remedies of its two-year market investigation into the energy sector. As part of its statutory requirements, the CMA was required to decide whether *'any feature, or combination of features, of [the energy] market prevents, restricts or distorts competition in connection with the supply or acquisition of [energy] services in the United Kingdom or part of the United Kingdom'.*

The CMA identified a number of concerns of relevance. These are outlined in Figure 16 below.

[68] DECC and Ofgem, Smart Metering Implementation Programme – Prospectus, (July 2010)

[69] Department for Business, Energy & Industrial Strategy, Smart Meter Roll-out Cost-Benefit Analysis, August 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/567167/OFFSEN_2016_smart_meters_cost-benefit-update_Part_I_FINAL_VERSION.PDF

Figure 16 Key findings and retail market regulatory changes recommended by the CMA

CMA's areas of concern		Recommended remedies
Weak domestic customer response	▪ Customers have limited awareness of, and interest in, their ability to switch energy supplier. ▪ Actual and perceived barriers to switching. This is a particular issue for pre-payment and restricted meter customers. For example, restrictions on switching arising from rules around customers in debt[70]. ▪ Actual and perceived barriers to accessing and assessing information.	▪ Ofgem to establish an ongoing programme to identify, test and implement information measures to help improve customer engagement. ▪ The creation of an Ofgem-controlled database of "disengaged customers" on default tariffs to allow rival suppliers to contact them.
Prepayment customers	▪ Some features of the market reduce suppliers' ability or incentives to acquire this sub-set of customers and innovate by offering tariff structures that meet customers' demand: - Technical constraints - Softened incentives to acquire e.g. actual and perceived higher costs to engage with and acquire these customers, and low prospect of completing the switch of indebted customers.	▪ Ofgem to establish an ongoing programme to identify, test and implement information measures to help improve customer engagement. ▪ The creation of an Ofgem-controlled database of "disengaged customers" on default tariffs to allow rival suppliers to contact them. ▪ The introduction of a transitional price cap on pre-payment meter tariffs (to apply to 2020, when the smart meter roll-out is expected to be complete).
Retail Market Review	▪ Ofgem's 2014 Retail Market Review reforms imposed a number of restrictions on suppliers. ▪ The CMA concluded that these restrictions had reduced retail suppliers' ability to compete and innovate in designing tariffs and discounts to meet customers' needs and by softening competition between suppliers and price comparison websites.	▪ Ofgem to remove: - ban on complex tariff structures; - four tariff rule; - restrictions on offer of discounts, bundled products, reward points; and - requirement to make all tariffs available to new/existing customers.

[70] "An energy supplier can stop a customer who owes them money from switching to a new supplier, where a debt has not been repaid for 28 days or more. This is known as a debt objection. Prepayment customers can, however, still switch supplier in the event of a debt objection by using a process known as the Debt Assignment Protocol (DAP)." https://www.energy-uk.org.uk/publication.html?task=file.download&id=5937

Ofgem 'State of the Market' annual reports

Ofgem's 2017 State of the Market Report was the first comprehensive annual assessment of the state of energy markets in GB. It covered the period since the CMA concluded its investigation into the energy sector in 2016, and sets a baseline for future annual Ofgem reports.

This report also outlines Ofgem's progress in relation to the CMA's remedies, namely[71]:

1. **Temporary cap on PPM tariffs:** In April 2017, Ofgem implemented a cap on PPM tariffs. Prices fell on average by around £60 for a typical dual fuel PPM customer, but some of the cheapest tariffs are no longer available. From February 2018, Ofgem has extend this cap to recipients of Warm Home Discount (a Government energy bill discount scheme for certain recipients of Pension Credit and other low-income households).
2. **Tariff restrictions lifted:** Ofgem lifted restrictions on the number of tariffs that can be offered by energy retail suppliers. Since this, there has been some innovation in tariff offerings, namely:
   a. the number of core[72] tariffs in the non-PPM segment has increased from 90 to 120 (although this is mostly explained by entry of new suppliers); and
   b. an increase in tariffs that track wholesale price changes.
3. **Customer engagement measures:** Ofgem is also trialling measures to improve customer engagement, for instance by communicating cheaper offers to disengaged customers, including:
   a. changes to Ofgem's accreditation scheme for price control comparison sites;
   b. trialling a new 'Check Your Energy Deal' online switching service; and
   c. exploring the case for the wider use of collective switching.

Draft Energy Price Cap bill

In October 2017, the Government put forward draft legislation *('Draft Domestic Gas and Electricity (Tariff Cap) Bill[73]')* which will require Ofgem to modify supplier licence conditions to cap some electricity and gas prices. The bill will impose a temporary price cap for domestic customers on standard variable tariffs (SVTs) and default tariffs (those that a customer did not choose to be on). This cap will be set by Ofgem, initially lasting until the end of 2020, with the potential to be extended by up to three years if needed. The bill also requires Ofgem to carry out a review into whether conditions are in place for effective competition for domestic supply contracts in 2020 and again in 2021 and 2022 if the decision is made to extend the cap. The Business, Energy and Industrial Strategy Committee conducted pre-

[71] Ofgem, State of the market report (2017), https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

[72] *"A core tariff covers the charges for supply of electricity/gas combined with all other terms and conditions that apply, or are in any way linked, to a particular type of contract for the supply of gas/electricity. It excludes certain matters such as dual fuel discounts, variations in charges relating to payment method, appropriate surcharges and optional additional services."* Ofgem, State of the market report (2017). https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

[73] https://publications.parliament.uk/pa/bills/cbill/2017-2019/0168/18168.pdf

legislative scrutiny of this bill. This involved examining the objective, provisions, and likely impact of the legislation. The bill has now been presented to Parliament by the Government.

6.2 Current pricing structure

We have not found any evidence to suggest that personalised pricing practices are being undertaken by energy retail suppliers. Suppliers' tariff offerings do currently reflect some customer segmentation. The current pricing structure is likely, to some extent, to reflect the different cost to serve customers with different usage or payment patterns. It may also include an element of price discrimination. However, the information is not publicly available to allow one to separate out these two effects.

The majority of this segmentation is not new to the energy market. For example:

- **Payment method:** Suppliers offer separate tariffs for customers on a pre-payment meter (which have a higher cost to serve) to those paying in arrears. As outlined above, the CMA market investigation led to an Ofgem implemented price cap on pre-payment tariffs.
- **Length of contract (fixed vs. variable):** Suppliers offer fixed term price contracts and standard variable tariffs (which can have different costs to serve[74]). The Government draft energy price cap bill will result in price caps being applied to standard variable tariffs, as set out above.
- **Demand for multiple services:** Suppliers offer discounts for customers on 'dual-fuel' contracts.

More recent segmentation includes the following.

- **Method by which a consumer interfaces with suppliers (Online vs. offline):** Suppliers offering 'online' tariffs ranging from tariffs that only allow online interactions (i.e. no interaction through call centres) to those that do not include paper bills (reflecting different costs to serve).
- **Multi-platform bundling:** For example, bundling with other utility or insurance services.

6.3 Future outlook

As outlined above, there is little evidence to suggest that personalised pricing strategies are currently used in the energy sector. Therefore, we have looked to the future to consider the likelihood of personalised pricing being introduced.

Our stakeholder interviews revealed that any move towards personalised pricing is expected to be closely related with the offer of smart tariffs, which are at an incipient stage. Therefore, the current smart meter roll out may give rise to the potential for new pricing strategies. Smart meter data has the potential to provide further information for suppliers to segment customers based on usage patterns

[74] The hedging strategies used by suppliers in relation to fixed vs. variable tariffs differ given that a customer on a variable tariff could switch supplier at any time. These different hedging strategies incur different costs.

and reflect this in their tariff offerings. Therefore, in the remainder of this section we:

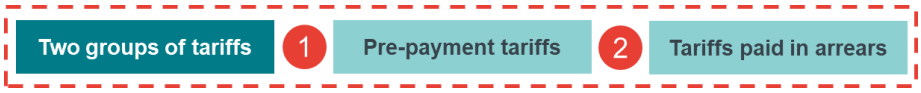
- provide detail on the smart meter roll-out and the types of data that it will provide; and
- consider the potential use of smart meter data in future personalised pricing strategies.

The energy sector is currently entering a time of change with technological developments likely to shape how consumers engage and firms compete in ways we have not yet seen in the sector. Therefore, the extent and implication of future personalised pricing in the energy sector is particularly uncertain.

6.3.1 Overview of consumer data produced by smart meters

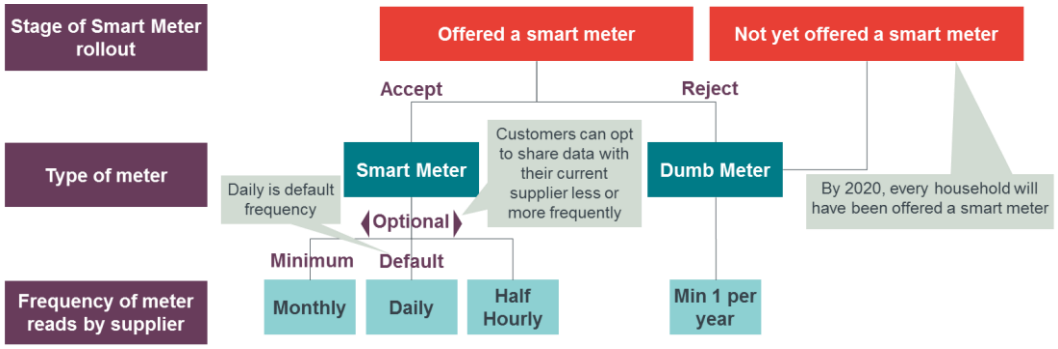
At a high level, after the smart meter roll-out is complete, suppliers are likely to continue to segment tariffs on the basis of payment method, as shown in Figure 17.

Figure 17 Segmentation based on payment method



For each payment method, smart meters create four distinct groups of customers based on whether they accept a smart meter, and, if they do, the frequency with which they share data with their supplier, as shown in Figure 18. If a customer has a smart meter installed[75], the default frequency with which meter readings will be sent to their current supplier is daily. However, customers can opt to share this data with their supplier with less or more frequency.

Figure 18 Segmentation based on type of meter and frequency of meter reads by suppliers



As a result of demand cycles, costs to serve can vary considerably over time. Wholesale electricity is priced on a half hourly basis, with peaks in demand increasing the cost of generation (and demand management), thereby driving up the wholesale price. Without frequent meter read data, suppliers have been unable

[75] Note: It is unlikely that suppliers will initially offer separate tariffs to those that have remained on a dumb meter. However, these customers may eventually have to pay a 'meter read' charge (or similar) to reflect the higher cost to serve this group.

to reflect these cost differentials in tariffs, resulting in a cross-subsidy between consumption in peak and off-peak periods.

Data collection facilitated by smart meters therefore provides the opportunity to more accurately reflect this cost variation over time, either on a daily or half-hourly basis, allowing suppliers to reduce the cross subsidy through day and/or time-based tariffs[76]. As highlighted by the Government's statements around the drivers of the smart meter rollout[77], it is expected that such tariffs will encourage consumers to smooth consumption between peak and off-peak tariffs, thereby moving towards increased security of supply and anticipated reduced carbon emissions.

6.3.2 What tariffs may be offered in the future?

Given the cost differentials discussed above, smart meters may result in increased second-degree price discrimination in the energy sector. For instance, suppliers may choose to offer:

1. tariffs with no peak or off-peak distinction;
2. tariffs with a peak and off-peak distinction by day; and
3. tariffs with a peak and off-peak distinction by day and time (based on hourly or half hourly periods).

Only customers sharing at least daily meter read data could practically avail of the second set of tariffs, and only those sharing half hourly meter read data could avail of the third set of tariffs.

6.3.3 Will smart meters lead to personalised pricing?

Smart meters facilitate the collection of more detailed consumption data. This data is strongly protected by law, and consumers have the right to decide:

- how often smart meters send readings to their current energy supplier;
- whether to share data with other organisations, like price comparison websites; and
- if their current supplier can use their meter readings for sales and marketing purposes.

Any differential in prices that suppliers decide to offer is limited to that based on a supplier's increased knowledge about usage patterns and the ability or willingness to smooth out peak and off-peak consumption. It is unclear whether suppliers may be able to infer anything further about an individual customer's willingness to pay, given that consumers need to opt in to sharing detailed time of use data. Therefore,

[76] Note: We cannot assume that, absent smart meters, more sophisticated collection of meter read data wouldn't develop.

[77] *"By enabling time of use (TOU) tariffs which tend to shift a proportion of electricity generation to cheaper off-peak times, smart meters are also expected to generate savings both in terms of distribution as well as generation capacity investment."* Department for Business, Energy & Industrial Strategy, Smart Meter Roll-out Cost-Benefit Analysis, August 2016, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/567167/OFFSEN_2016_smart_meters_cost-benefit-update_Part_I_FINAL_VERSION.PDF

while second degree price discrimination could occur in a more and more refined way, personalised pricing is less likely under current conditions.

This situation may change in the future as homes become more and more 'connected' through gateway products such as Google or Alexa. Such products may allow suppliers to collect additional data on consumers through these new networks. Over time, energy retail may move from a world where customers buy units of energy ('commodity' based), to one where they contract with someone who makes sure that the lights are on and the home is heated while they are there ('service based). This move appears to largely be dependent on the evolution of the role of gateway products.

6.3.4 Welfare and distribution impact

Welfare impact

As discussed, there is little evidence of current personalised pricing practices by energy retail suppliers in the UK. Overall, there are a lot of initiatives and changes being made in the UK energy market at present, including the roll out of smart meters. These initiatives have objectives, and an intended direction, that may facilitate changes in consumer behaviour. However, it is currently unclear exactly how things will evolve and what the end point will look like.

The potential welfare implications of hypothetical personalised pricing scenarios in the energy sector are considered below. Although, given the above, there is significant uncertainty in relation to potential pricing developments.

As discussed above, smart meters are likely to result in more refined second-degree price discrimination, but it is unclear whether personalised pricing will develop. Of course, there may yet be other personalised pricing strategies in the future that could have different effects.

Our framework set out above provides a guide to assessing the potential impact of such pricing strategies.

- **Appropriation effect**: Whether firms can increase prices above non-personalised levels will be impacted by safeguards that are in place and the consumers' ability to opt out of sharing the detailed data with suppliers.

  In relation to **safeguards,** all customers will have access to a regulated tariff until at least 2020, with the possibility of it being extended to 2023 if necessary. A draft domestic temporary price cap bill has been presented to Parliament by the Government. This will cover standard variable tariffs and default tariffs[78].

  It appears that consumers will retain the ability to **opt out** of time of use tariffs in the future. CEPA's 2017 report for Ofgem on the distributional impact of time of use tariffs highlights that Ofgem's view is that the current default would be unlikely to change under the current regulatory arrangements[79].

[78] There are price caps currently in place for pre-payment customers and those availing of Warm Home Discount

[79] CEPA,(2017) "*Distributional Impact of Time of Use Tariffs*",

- The above suggests that, into the future, there are a number of safeguards protecting consumers from the ability of suppliers to appropriate welfare in relation to personalised pricing in the energy sector. **Output effect**: Given the uncertainty in how pricing strategies will develop, it is difficult to speculate on the output effect off personalised pricing. However, if, via "connected homes," energy does become more of a package of services then bespoke service offerings could increase output as services are better tailored to consumers' needs.
- **Competition intensifying effects**: One of the key design objectives of the smart meter roll out, and Ofgem's Switching Programme (which aims to implement reliable next-day switching), is to increase the level of engagement in the market and facilitate increased competition between energy suppliers. In carrying out the cost benefit analysis as part of the assessment of the potential benefits of a Government driven smart meter roll out, the Department for Business, Energy and Industrial Strategy found that the rollout would have positive welfare benefits, primarily due the savings for consumers from reduced energy consumption[80]. It is possible that this will be facilitated by the measures that Ofgem is currently trialling to improve consumer engagement.

Distributional impact

Again, as there is little evidence that personalised pricing is currently taking place in the energy sector, we have considered the potential distributional impacts of hypothetical personalised pricing in the future.

Vulnerable consumers and discrimination

One potential sub-group of customers that may be disadvantaged are those who end up on Time of Use tariffs (either daily or half hourly) but who don't shift their usage between peak and off-peak times. This group may comprise both customers who genuinely can't shift their usage, either at all or without discomfort; and customers who have opted in to time of use tariffs assuming they will change their behaviour, but who in reality don't succeed in changing their behaviour. As we noted earlier, this group may potentially have a safeguard in the form of their ability to opt out of Time of Use Tariffs, assuming that Ofgem's assessment is correct that it is unlikely that Time of Use Tariffs will become the default option. The efficacy of this safeguard will depend both upon the tariffs available to 'opt out' consumers and the extent to which customers who find themselves in this group are engaged enough to opt out of Time of Use Tariffs.

A further sub-group of customers to consider are those that have largely off-peak usage who could gain from tariffs with a peak and off-peak distinction by day and time. These customers are not necessarily at a disadvantage relative to a market absent of Time of Use tariffs, but could benefit from switching to such a tariff. Here, the level of distributional impact will largely be driven by:

- the level of market engagement (which key market players expect will increase with the smart meter and switching programmes); and

[80] BEIS, (2016), "*Smart meter roll-out cost-benefit analysis*"

- the prospective savings to be made.

CEPA's 2017 report for Ofgem states that vulnerable customers *"are generally less engaged in energy purchase, which means they are less likely to make explicit choices but rather remain with their existing arrangements."*[81] They therefore may be over-represented in this group.

Impact on consumer trust

The other aspect that we have considered in relation to the distributional impact is consumer trust. Trust can be impacted by the degree of tariff complexity and transparency in the market. The increased number of tariff deals would bring increased complexity, but Ofgem's consumer engagement initiatives may aid understanding and transparency. In addition, the CMA concluded that Ofgem's previous restrictions had reduced incentives to compete and innovate, to the detriment of consumers. Smart meters will also increase transparency for consumers around the cost of their energy usage, and third-party intermediaries may enter the market and assist consumers in dealing with increased complexity in offers.

6.4 Conclusions and recommendations

This chapter has outlined the application of our analytical framework to the energy sector. There is currently no personalised pricing in this sector. Because of the recent regulatory and political changes in the sector, it is currently not clear exactly how things will evolve and what the end point will look like going forward for the sector. Particularly in a world where we are evolving towards 'connected' homes and potentially very different ways of engaging with the energy market.

This makes it very difficult to evaluate the possible welfare and distributional impacts of future pricing strategies. We therefore recommend that Citizens Advice undertake a further review of the sector once the future direction of the sector is more apparent. We also outline in section 8 additional implications from more speculative future scenarios.

Going forward, it is clear that the level of consumer engagement in the market, and representation of vulnerable customers within the disengaged segment, will play a key role in both the welfare and distributional effects of future customer segmentation in relation to tariffs. We would therefore recommend that Citizens Advice keep a watching brief on consumer engagement in the market, taking particular note of:

- the overall rates of external and internal switching;
- how this varies across different demographic groups, particularly more vulnerable groups;
- how this varies across customers availing of tariffs based on prepayment vs. payment in arrears, and within each of these, the customers availing of the different future sets of tariffs outlined in this chapter; and

[81] CEPA, Distributional Impact of Time of Use Tariffs, 2 May 2017, https://www.ofgem.gov.uk/system/files/docs/2017/07/distributional_impact_of_time_of_use_tariffs_1.pdf

- the relative effectiveness of any Ofgem and Government engagement initiatives and any unintended consequences.

7 WATER

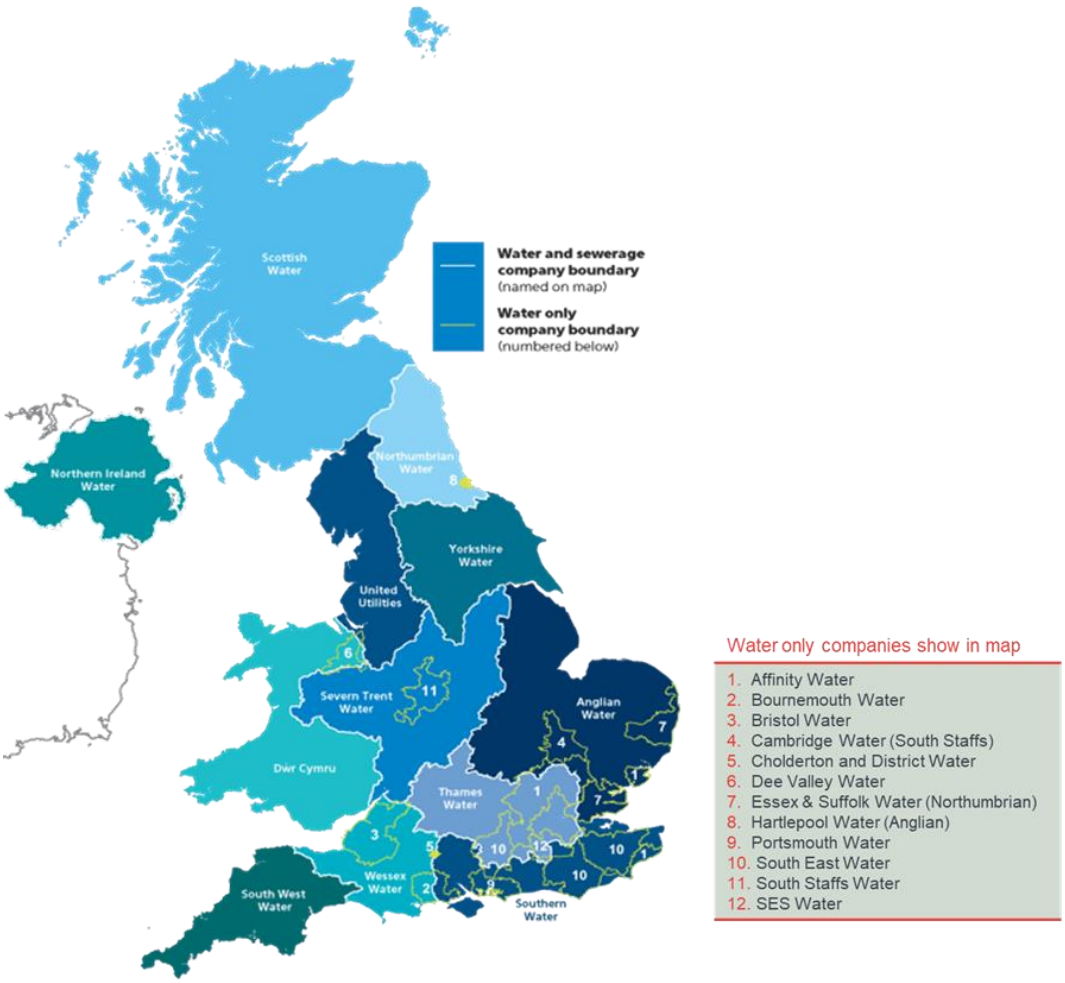
In this section, we apply our analytical framework to the water sector. Given Citizens Advice's mandate as representing consumer views, we have limited the scope of our assessment to residential water and wastewater companies, and have not considered the potential for personalised pricing to commercial customers. We provide:

- a short overview of the structure of the market and regulatory intervention;
- an outline of the current pricing structure in the sector;
- the future outlook of this pricing structure based on the available evidence; and
- recommendations for Citizens Advice.

7.1 Sector overview

The UK water network is made up of 24 regional monopolies, 12 Water Only Companies (WOCs) and 12 Water and Wastewater Companies (WASCs), providing water and wastewater services across the UK. Each WOC and WASC operates in a pre-defined geographical area and residential customers cannot choose their supplier.

Figure 19 Defined geographical areas of UK water and wastewater suppliers



Source: Water UK

Regulatory intervention in the market

This section outlines the relevant regulatory interventions in the market as they relate to tariffs. As discussed below, these regulatory interventions provide little scope for water and wastewater companies to differentiate tariffs to customers, or personalise prices.

England and Wales

Each WOC and WASC is subject to price control regulation by Ofwat. There are separate retail and wholesale controls for each company. This reflects the fact that, in April 2017, the business retail market was opened up to competition.

The price control period lasts for five years, and are sometimes referred to as AMP (Asset Management Plan) periods. Leading up to each AMP, Ofwat conducts a price review of all WOCs and WASCs in England and Wales.

To reflect differences in the cost to serve different customer types, Ofwat calculated costs for five different customer types, namely:

- single-service (water or wastewater) unmeasured (i.e. unmetered);
- dual-service (water and wastewater) unmeasured;
- water-only measured (i.e. metered);
- wastewater-only measured; and
- dual-service measured.

The revenue each company is allowed to earn was then made up of the sum of the retail cost to serve each customer type plus an allowance for the net margin on wholesale and retail activities.

Ofwat plan to take a slightly different approach during the 2019 price review (PR19). It will examine whether there are differences in retail costs by customer type, and based on this, take one of the following approaches.

- If there are differences in retail costs by customer type, it proposes to continue to use a weighted average revenue control so that these differences can continue to be reflected in revenue allowances.
- If there are no differences in retail costs across customers then it proposes to set an average revenue control to reflect the variation in retail costs by customer numbers and provide strong incentives for cost efficiency.

In line with the provisions of the 1991 Water Industry Act, Ofwat has also set out charging scheme rules for companies. Amongst other things, these rules define a number of principles that companies should use in determining the amounts of charges. As detailed below, these rules ensure that differences in charges between certain customer segments only reflect the differential costs of serving these segments.

OFWAT – CHARGING SCHEME RULES

DECEMBER 2016 – ISSUED UNDER SECTIONS 143(6A) AND 143B OF THE WATER INDUSTRY ACT 1991[82]

- Consistent principles and approaches must be applied to the calculation of charges for different classes of customers.
- Charging structures must reflect the long run costs associated with providing the relevant service.
- Charges for services provided to domestic premises must be fixed so that the average difference between metered charges and unmetered charges only reflects any differences in the costs of, and the additional benefits of, the provision of one service relative to the other.
- Differences between charges for services provided to larger users of water and charges for services provided to smaller users of water must only be based on cost differences associated with differential use of network assets, differential peaking characteristics, different service levels and/or different service measurement accuracy.
- Where cost differences associated with differential peaking characteristics are used as a basis for differences between charges for services provided to larger users of water and charges for services provided to smaller users of water, the charges fixed on that basis must be structured on an appropriate peak demand basis.
- Charges for sewerage services must take into account the different pollutant loads associated with household foul sewage, non-household foul sewage, trade effluent, surface water draining from premises and surface water draining from highways.

Companies must also consult the Consumer Council for Water before making changes to their charging schemes. In addition, the Board of Directors must publish a statement to confirm that it has assessed how the new charges impact on customer bills. If any charges increase by more than 5%, the Board must provide evidence of handling strategies to be implemented for affected customers.

In addition, there are three additional tariff schemes to support Ofwat's drive towards affordability:

- **Customer-funded social tariff schemes** – Section 44 of the Flood and Water Management Act 2010 enables water and wastewater companies in England and Wales to include social tariffs in their charges schemes. It enables companies to reduce charges for individuals who would otherwise have difficulty paying their bill in full. It explicitly allows companies to introduce cross-subsidy between customers. In line with the same section of the Act, the Department for Environment, Food and Rural Affairs issued further guidance in 2012 around how these schemes should work in practice[83]. Companies must

[82] Ofwat, Charges Scheme Rules, December 2016, https://www.ofwat.gov.uk/publication/charges-scheme-rules/

[83] DEFRA Company Social Tariffs: Guidance to water and sewerage undertakers and the Water Services Regulation Authority under Section 44 of the Flood and Water Management Act 2010, June 2012,

demonstrate consumer support for these schemes, and not all companies offer them as a result of low support.

- **Voluntary schemes** - Several water companies also operate voluntary schemes such as charitable trusts and arrears allowance schemes. A small number of companies also trialled social tariff schemes funded only by the associated savings in debt recovery costs - predominantly targeted at customers who had already fallen into debt with their water bills rather than those continuing to pay but suffering hardship as a consequence.
- **WaterSure** - A mandatory scheme offered by all companies, which caps metered bills at an average level for low income customers with high essential water use needs (due to a large family or health circumstances).

Scotland

Scottish Water is regulated separately from companies in England and Wales. It is subject to price control regulation by the Water Industry Commission for Scotland (WICS). The price control period lasts for five years and in between each price review, WICS monitor and report on Scottish Water's performance in delivering what was set out in its Business Plans.

As owners of Scottish Water, Scottish Ministers set out the objectives for the water and sewerage industry in Scotland. These objectives include:

- improvements in water quality;
- environmental performance; and
- customer service.

WICS must then set price limits that deliver these ministerial objectives at the lowest reasonable overall cost.

Scottish Ministers also set out the charging principles that should be followed in deciding the tariffs paid by customer groups for specific services.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69564/pb13787-social-tariffs-guidance.pdf

SCOTTISH GOVERNMENT

GENERAL STATEMENT OF POLICY – PRINCIPLES OF CHARGING FOR WATER SERVICES 2015-2021[84]

Before each price review, Scottish Ministers set out a number of high level charging principles aimed to guide WICS when determining the charge limits that Scottish Water is able to set during the forthcoming price control period. For the 2015-2021 period, five high level principles were determined:

4. **Stable charges** – Ministers recognise the importance that customers attach to stability and certainty in charging.
5. **Level of charges** – Ministers' policy is for charges that do not rise by more than inflation, as measured by the Consumer Price Index, across the period.
6. **Full cost recovery** – Charges should cover the full costs of providing services to customers.
7. **Harmonised charges** – Ministers require that charges should, for similar services provided to customers of a similar category, be the same for each customer in that category regardless of location in Scotland.
8. **Cost reflective charges** – Charges should remain broadly cost-reflective. In particular, charges for given services (for example drinking water) to particular customer groups (for example households) should be set to recover the cost to Scottish Water nationally of providing that service to that group as a whole.

A number of additional requirements for household charges are also in place.

- **Unmetered households:** Local Authorities will continue to bill and collect unmeasured household water and sewerage charges. The bandings for these charges should replicate council tax bandings, with reductions on water and sewerage charges also mirroring the discounts that apply to council tax.
- **Purpose-built student accommodation:** Only brought into charge whilst it is not occupied solely by full-time students studying at a Scottish University or College.
- **Drainage charges:** Household charges should continue to include appropriate elements to recover the cost to Scottish Water of draining roofs and other impermeable surfaces from household premises; and those public roads that are connected to its sewers.

7.2 Current pricing structure

Given the regulatory restrictions regarding the cost reflectiveness of tariffs as outlined above, there is currently no price discrimination in the Water sector. Customer segmentation in pricing is therefore restricted to factors around which

[84] Scottish Government, General statement of policy – principles of charging for water services 2015-2021, 1 October 2014, http://www.gov.scot/Resource/0045/00459866.pdf

there are genuine cost differentials or practicality issues, for example, metered vs. unmetered customers.

7.3 Future outlook

Given personalised pricing does not currently exist in the water sector, we have also considered whether future developments may increase the likelihood of personalised pricing.

In November 2015, the UK government published '*A better deal: boosting competition to bring down bills for families and firms*'. Building on opening up the non-household retail market to competition, the report asked Ofwat to provide an assessment of the costs of extending competition to the residential water market. Ofwat published this report in September 2016. It concluded that the introduction of competition in the residential retail market in England would be likely to result in a modest net benefit if the market can be designed and regulated appropriately. It is now up to the Government to decide whether and how to introduce competition, including the impact on charging scheme rules. This decision was expected last year, but has been delayed by the preparations for Brexit.

In the near term, we do not expect to receive certainty on whether competition will be introduced to the residential retail water market. However, once competition is introduced in the non-household retail market, the next AMP has begun, and the Brexit negotiations are finalised, it may come back onto the political agenda.

If competition were to be introduced, the resulting customer segmentation would depend on the way that this is done and the regulatory restrictions that remain in place. Given the experience in other sectors, if the new regulatory regime allows, the following customer segmentation could develop with regards to prices.

- **Customer type:** Whether a customer is availing of a single service or dual service through one company (i.e. water or wastewater only versus a combined service).
- **Bundling on water and wastewater services with other utilities:** Further segmentation of customers based on whether they also avail of other utilities through the same company.
- **Level of usage:** Segmentation between high volume and low volume customers through either tweaking the balance between the level of the fixed standing charge and the volumetric charge, or setting different standing and volumetric charges based on set usage bands.

Moreover, for personalised pricing to be introduced in the water sector it is also likely that firms would need access to more in-depth customer information, such as through the deployment of smart water meters.

7.4 Conclusions and recommendations

There is currently no scope for price discrimination in the UK water sector. If the Government does decide to introduce competition into the market, then this situation could change if the regulatory regime allows. However, the timing over a Government decision is currently very uncertain and the introduction of competition

is therefore unlikely in the near future. Ofwat's report on the benefits of competition found that there is likely to be a modest net welfare benefit to consumers. However, it is difficult to say a priori what the distributional impact of any further customer segmentation that results will be.

If competition is introduced into the market in future, we would recommend Citizens Advice to review the scope for price discrimination in the context of:

- the new regulatory regime;
- early indicators of the competitors that are seeking to enter the market; and
- any potential products that the existing WOCs and WASCs, along with any new entrants, are considering.

In the longer term, we would recommend Citizens Advice to keep a watching brief, on the factors that we have considered in relation to the other sectors covered in this report, including:

- the evolution of prices;
- the evolution of quality measures;
- switching and how this differs across customer groups, including vulnerable customers;
- regulatory protections that are introduced for vulnerable customers;
- level of consumer engagement in the sector; and
- links to other sectors through cross-sector bundling.

8 POTENTIAL FUTURE TRENDS IN PERSONALISED PRICING

As detailed in the preceding chapters, we have found limited evidence to date of personalised pricing in essential service markets. Also, as discussed, there are a number of factors in each market which may limit the prevalence of personalised pricing.

However, with the ever-increasing growth of personal data and increasingly sophisticated analytical techniques, it is possible to envisage future scenarios where personalised pricing becomes much more widespread. For example, consumers' homes are likely to become increasingly 'smart' over time with a plethora of devices connected to the internet. Those 'smart homes' may produce considerable new, real-time consumer data that would allow for as-yet unknown product offerings. These data sets may also be connected or integrated with wider datasets (e.g. from social media) to provide a richer sense of consumer preferences. The development of such new product offerings and data on consumer preferences may be accompanied by increasingly sophisticated and personalised pricing strategies.

In turn, this could potentially provide the scope for a firm to provide suites of products containing multiple consumer products across both essential markets, as studied in this report, and wider retail markets. These new products could be from either new entrants or incumbents that adapt to provide consumers with innovative new products or suites of products specifically tailored to consumers' preferences.

Under this hypothetical future scenario, this section sets out the:

- potential welfare and distributional implications; and
- implications for possible developments in consumer safeguards.

8.1 Potential welfare and distributional impacts of such pricing changes

In aggregate, the welfare impact of new, innovative product offerings and personalised pricing would depend on the balance between the appropriation effect, the output expansion effect, and the intensity of competition effect.

If personalised pricing arises because of entry and disruption of traditional markets then it is likely that, in aggregate, the competition intensity and output expansion effects would dominate, at least in the short term. The balance would depend on the degree of concentration across markets and access to data versus the ease of new entry and the elasticity of demand. Regulators may need to be careful to ensure that concerns about future personalised pricing do not create barriers to such innovation.

On the other hand, personalised pricing that is in aggregate welfare enhancing could have negative impacts over time.

As discussed in section 2, consumer welfare effects from price discrimination tend to be most pernicious when there is little or no competition (for example, in the

case of a monopoly). This general finding on price discrimination is likely to apply equally to personalised pricing where, in monopoly scenarios, the appropriation effect of such pricing practices can dominate the output effect. All the essential markets considered in this report currently contain either a degree of competition or, in the case of monopolies, are strictly controlled in terms of the prices they can charge. Therefore, if personalised pricing does result in significant negative effects in the future it may be, at least partly, due to a diminution of competition or regulatory constraints.

One way in which the level of competition could be decreased in the future is if consumer data leads to **lock in** with an incumbent supplier. This is because firms with access to consumer data may be able to provide products that other firms cannot (for example, if consumers were unable to readily port data to an alternative platform or provider, therefore limiting the ability of other firms to offer similar products). Or, alternatively, it may reduce the ability of those without access to the data to make the most profitable offers. Therefore, this may reduce consumers' ability to switch in the future even in the face of personalised pricing that appropriates some of their welfare. As such, this could increase market power and reduce competition in the future. Whether such data could lead to an increase in market power depends on whether:

- the data is necessary, such that access to the data is needed to compete in the downstream market;
- the data cannot be replicated; and
- the value in the data is long-lived, as opposed to diminishing rapidly, therefore allowing others to compete.

We suggest that in many cases all three criteria may not be met, and hence these requirements might be considered a high bar to meet in terms of consumer data leading to increased market power. We also note that there is a time dimension to this, in that consumers may benefit in the short-term from new product and pricing combinations, but may become increasingly locked-in over time. This could be exacerbated if consumers had a number of products or devices that were, in essence, locked in to a certain platform or provider.

General competition safeguards (applying to all sectors, and not just essential markets) are currently in place in order to protect consumers from firms abusing their market power (as discussed in section 3). The efficacy of these protections may be enhanced in a future with widespread personalised pricing if further consideration is given to the three key areas of consumer safeguards outlined further below in the section: (1) the collection and use of consumer data, (2) transparency of personalised pricing and (3) consumer engagement in the market.

Even if personalised pricing is broadly welfare enhancing across consumers, there could be adverse **distributional consequences**, as discussed in detail in previous chapters.

Personalised pricing has the potential to impact consumer engagement in essential markets. First, the distributional impacts of personalised pricing on consumer engagement will depend on the existing levels of engagement in the market. This is because increased complexity from personalised pricing could exacerbate pre-

existing trends in the sector. Second, personalised pricing could impact future customer engagement in different ways. On the one hand, consumers may see a more direct link between their usage patterns and how services are priced, and may therefore engage more in the market to improve the value they receive from suppliers.

On the other hand, those customers that remain disengaged could face higher prices than previously. This is because these consumers are currently protected, at least to some degree, by other "marginal" consumers that have lower willingness to pay. Therefore, a firm optimising its list price must balance consumers with higher and lower willingness to pay. If firms' ability to personalise price increases and they therefore discount to those consumers with lower willingness to pay, the list price may increase as there will be proportionally more higher willingness-to-pay consumers paying the list price. Therefore, those remaining on the list price may end up paying a higher price.

In addition, a lack of 'standardised' pricing can make it more challenging for consumers to compare across products and suppliers. A common behavioural response to such complexity is inertia. That is, consumers could respond to the increased complexity by becoming less active in the market, or choosing not to enter the market, as they do not want to risk making the 'wrong' decision when switching supplier or product offering. Rather, they remain either with the incumbent or with the default offering. In such a scenario, it is possible to imagine that less engaged consumers could be adversely impacted[85]. Depending on the extent of this impact, there may also be ramifications for overall consumer surplus.

Moreover, the less engaged may be more likely to be vulnerable consumers if those consumers face challenges in being able to fully engage in the market – for example, if they lack the ability to access the necessary information to be fully engaged, or the capacity to make coherent decisions based on the information available. As discussed below, future regulatory considerations should include active monitoring of whether vulnerable consumers are adversely impacted by personalised pricing, even in cases where the overall welfare impact is positive.

8.2 Implications for consumer safeguards

Section 3 outlined the current consumer safeguards, whereas sector-specific safeguards were discussed further in the preceding sections that applied our framework to essential markets. Where existing safeguards are in place, including price controls, these should be kept under review to consider whether they remain appropriate given potential changes in consumer needs (including which products require specific consumer safeguards).

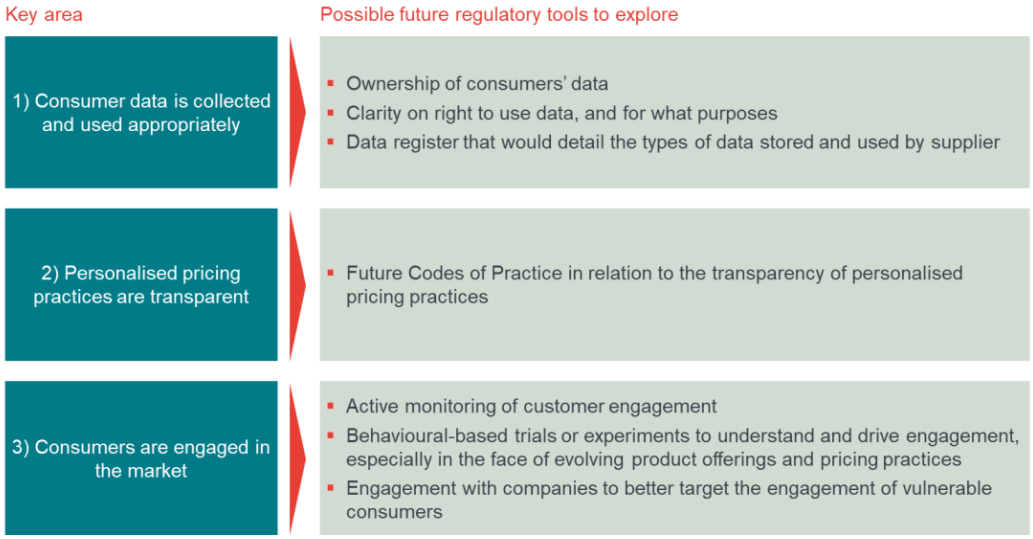
Personalised pricing has the potential to evolve in unknown ways over the coming years. As the amount of consumer data generated increases, this may in turn lead to new pricing strategies and practices becoming available to firms.

In general, there is a presumption in favour of allowing innovation and disruption in the market as it is considered likely to be pro-consumer. However, given the

[85] In principle that this may create opportunities for new entry by third parties that will carry out such complex assessments on behalf of customers.

evolving nature of personalised pricing, we discuss below three areas with emerging challenges. In these areas, Citizens Advice may wish to engage with regulatory authorities to ensure that they are able to respond appropriately should adverse impacts from personalised pricing appear likely to emerge. We summarise these three areas in the below figure.

Figure 20 Key areas for future regulatory considerations for personalised pricing



Such action is not limited to regulatory or legislative intervention, but is also likely to include action from firms or industries. The negative effects of personalised pricing could also impact the efficiency of those markets and therefore, in some cases, firms may also have the incentive to minimise negative consequences from personalised pricing. This may arise, for example, where personalised pricing might be expected to significantly erode trust in online markets, or where the use of personal data to tailor prices might make it considerably less likely that consumers share their data in the first place. There can, however, be a collective action problem in that firms have the incentive to maximise returns from their own brand, but are not necessarily fully cognisant of externalities. In such case, regulatory interventions may be warranted to maintain trust in online markets.

1. Collection and use of consumer data

Personalised pricing requires suppliers to have in-depth consumer data to estimate those consumers' willingness to pay for a particular product. It is likely that this would, in fact, require the combination of multiple data sets to get a full picture of consumer preferences, both in terms of consumption patterns but also other information about customer characteristics. All that data must therefore be collected from consumers in some manner.

We can therefore see that the interaction with data privacy law is particularly important, including GDPR which will give consumers greater control over their data as consent needs to be freely given, specific, informed and unambiguous.

As the collection and use of consumer data becomes more complex and intricate, it will be important for regulators to maintain an understanding of how this impacts on personalised pricing in essential markets.

For instance, as discussed in section 2, if consumers are able to opt out of personalised pricing they. They also cannot, by default, be opted in to firms gathering and using the necessary consumer data. These factors can reduce the ability of firms to be able to appropriate consumer welfare. However, future scenarios could include new product offerings which require in-depth consumer data as a critical input into the production of that product, such as service providers to smart homes. In this instance, consumers may be unable to opt out of personalised pricing if they want to access the product. In such a case, consumer protection may be maintained by ensuring consumers retain ownership rights over data, which will help protect them from being locked in to one supplier. In many aspects, consumers already have ownership over their data, e.g. through regulations relating to portability, consent and ability to request details of their data collected from firms. Whether such protections are appropriate and sufficient should be reviewed as pricings strategies develop further in the future. Transparency in relation to whether prices are personalised will also be a factor, as discussed further below.

Therefore, regulators should consider the merits of, for example:

- ownership of consumers' data;
- clarity on the right to use data, and for what purposes; and
- transparency over the types of data stored and used by suppliers in setting prices.

2. Transparency of personalised pricing

As discussed in our analytical framework, transparency of personalised pricing can potentially be a significant factor in the overall impact of that pricing on consumers. This is due to three interrelating factors.

- **Empowering consumers**: Consumers being able to opt out of personalised pricing is a key protection against negative appropriation effects. Therefore, transparency that personalised pricing is taking place would increase the likelihood that consumers might opt out (if possible), and therefore decrease the likelihood of negative consumer impacts.
- **Consumer trust**: Transparency can help ensure trust in the market. If trust decreases, this may lead to a lack of engagement (as outlined below), consumers withdrawing completely from the market, or consumers withdrawing from certain channels or products which may lead to negative efficiency impacts.
- **Impact on customer engagement**: Transparency can be one factor that impacts on customer engagement in a market. We discuss customer engagement in more detail below.

These factors suggest that the ongoing transparency of personalised pricing may be an important factor in future essential markets. This suggests that transparency

of personalised pricing will be important from a consumer protection perspective on an ongoing basis.

For example, regulators could consider:

- Codes of Practice (voluntary or mandatory) in relation to the transparency of personalised pricing practice and; whether companies must inform customers in cases where they are being offered tailored rather than standard prices; and
- ongoing monitoring of pricing practices to monitor transparency, and to ensure regulators are fully aware of current pricing practices in the sector.

3. Customer engagement

As discussed in our analytical framework, consumer segmentation may be possible due to behavioural traits, which can therefore lead to different prices for consumers that readily switch and those that do not. These groups of consumers are often referred to as 'engaged' or 'disengaged' consumers.

Personalised pricing has the potential to increase engagement for some consumers, but also has the potential to decrease engagement.

There are many initiatives currently underway to increase consumer engagement in essential markets. However, these markets may become more complex and interrelated over time. On the one hand, this provides market opportunities for suppliers to offer products that simplify consumers' decisions in an increasingly complex world. On the other hand, some consumers may become even more disengaged and increase their tendency to remain on the 'default' product or with their existing supplier.

If this scenario were to develop, regulators may need to consider more joined up or cross-cutting initiatives to promote consumer engagement, not just at a sector-by-sector level, but across all essential markets where a lack of consumer engagement may risk inefficient outcomes. Such initiatives may not only focus on essential markets themselves, but also engagement with consumer data more generally – how it is gathered, how it is used, and consumers' rights in relation to that data.

At the same time, regulators must be cautious not to implement regulatory measures to promote engagement that could have the unintended consequence of diminishing competitive dynamics. This is because consumers have, potentially, much to gain from the intensification of competition that new products and pricing may deliver in essential markets.

Therefore, regulators may want to consider in the future:

- active monitoring of customer engagement;
- behavioural-based trials or experiments to understand and drive engagement, especially in the face of evolving product offerings and pricing practices;
- active promotion of developments which could help consumers to make better decisions/make the decision-making process easier for consumers; and
- engagement with companies to better target the engagement of vulnerable consumers.

9 CONCLUSIONS

The first stage of this work was to develop a detailed analytical framework for assessing personalised pricing in essential markets. In developing this framework, we ensured that it could be used again by Citizens Advice to assess personalised pricing in other essential markets, or to review the sectors covered in this report in the future, namely:

- water;
- post;
- telecommunications; and
- energy.

Below we provide a summary of the assessment of those sectors.

9.1 Evidence of current personalised pricing in these sectors

At present, we are not aware of any evidence of personalised pricing in the sectors considered as part of the work.

Suppliers' tariff offerings do currently reflect some customer segmentation. The current pricing structure is likely, to some extent, to reflect the different cost to serve customers with different usage or payment patterns. It may also include an element of price discrimination based on consumers' differing willingness to pay.

Given the current lack of personalised pricing practices, we have considered the future outlook in relation to each sector, and the likelihood of personalised pricing emerging.

- **Water:** Personalised pricing is unlikely to emerge in the household water sector in the near future.
- **Post:** For online payment of mail, further segmentation may be possible if customer data is collected by Royal Mail in future by requiring users who wish to avail of online parcel postage discounts to register. This could potentially lead to personalised parcel pricing for this customer segment.
- **Telco:** If personalised pricing were to develop, the evidence suggests that this might be most likely to be in the form of personalised discounting, a natural evolution from the promotional discounts already prevalent, particularly in relation to bundling and retention.
- **Energy:** The current smart meter roll out may give rise to the potential for new pricing strategies. Any differential in prices that suppliers decide to offer is limited to that based on a supplier's increased knowledge about usage patterns and the ability or willingness to smooth out peak and off-peak consumption. It is unclear whether suppliers may be able to infer anything further about an individual customer's willingness to pay, given that consumers need to opt in to sharing detailed time of use data. Therefore, while second degree price discrimination could occur in a more and more refined way, personalised pricing is less likely under current conditions. This situation may change in the

future as homes become more 'connected' through gateway products, which may allow suppliers to collect additional data on consumers through these new networks.

9.2 Recommendations

Chapter 8 explored further the potential future trends in personalised pricing. Due to the speculative nature of the future pricing strategies in the sectors covered by this report, it is difficult to be definitive about the expected welfare and distribution impacts of future personalised pricing.

However, we recommend a number of further steps in relation to personalised pricing in essential markets.

1. **Monitoring of pricing practices**: Given the potential for personalised pricing to develop in essential markets in the future, we recommend that Citizens Advice and/or regulators undertake future empirical work to monitor pricing practices in the sector. In doing so, we would recommend giving particular focus to the customer segments that appear to be targeted with the pricing strategies, and tracking whether vulnerable customer groups are present in these segments.
2. **Monitor changes in the regulatory framework**: We recommend that Citizens Advice considers keeping a watching brief on any key changes in the regulatory framework outlined in the report. In particular:
   - the safeguard price caps in Post and Energy; and
   - consumer engagement initiatives in Telco and Energy.

   In doing so, it is important to consider how any changes relate to the customer groups outlined as part of the monitoring work. In relation to consumer engagement initiatives, Citizens Advice may want to specifically monitor the impact these initiatives are having on vulnerable consumers.
3. **Future review of personalised pricing developments**: Based on the findings of 2 and 3, we recommend that Citizens Advice undertake a full review of personalised pricing in essential markets using the analytical framework outlined in this report, where they find that:
   a. personalised pricing is becoming more prevalent across the whole customer base; or
   b. personalised pricing is disproportionately affecting vulnerable customer groups.
4. **Revisit sufficiency of transparency safeguards:** Our framework emphasises the importance of pricing transparency in relation to personalised pricing and the operation of efficient markets. As discussed, there are currently numerous consumer safeguards in place, including consumer protection and advertising legislation, the GDPR, and sector-specific regulation. However, personalised pricing – if it becomes prevalent – is likely to develop in uncertain ways given the changing technological, consumer demand and competitive landscapes. Therefore, Citizens Advice may wish to revisit in the future whether the above transparency safeguards, and their enforcement, continue to be sufficient.

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