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Telecommunications Consumers:
A Behavioural Economic Analysis

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Abstract: This paper makes the case that modern telecommunications markets present particular challenges for competition and consumer protection policy. The analysis initially identifies four specific properties, of which rapid technological change is just one, which in combination are unique to telecommunications. The result is that consumers face an environment that is likely to foment known decision-making biases identified by behavioural economics. This insight is employed to address two issues of concern to policymakers: the generally low levels of switching between providers and the apparent failure to select optimum tariffs. Evidence suggests considerable scope for consumer detriment in both cases. Various policy implications are discussed, including the need for targeted research to more accurately assess the extent of detriment and to increase understanding of the causes of consumer behaviour.

Keywords: Telecommunications; Decision-making biases; Behavioural economics; Regulation

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Telecommunications Consumers: A Behavioural Economic Analysis

1. Introduction

It is no exaggeration to state that the consumer response to the liberalisation of a range of formerly state-run markets, including networked utilities and telecommunications, has generally surprised economists. In theory, the opening up of these markets to competition allows consumers to be active in choosing the best and lowest cost suppliers, producing upward pressure on quality, downward pressure on prices, and an overall increase in consumer surplus and economic efficiency. To some extent, this may have happened, but what surprises is the degree to which consumer behaviour seems to depart from this ideal competitive scenario. Research in energy markets has revealed large numbers of consumers failing to switch to lower cost suppliers (Giulietti, Waddams-Price and Waterson, 2005). The majority who do switch fail to select the best available deal and a sizeable proportion of consumers who switch in order to make savings actually manage to increase their bills (Wilson and Waddams-Price, 2010). Similarly, evidence suggests that many consumers of internet and mobile telephone services choose suboptimal contracts (Lambrecht and Skiera, 2006; Grubb, 2009). Where such large proportions of consumers fail to select the best offering, the effectiveness of competition is undermined.

Explanations for suboptimal consumer choice are increasingly sought in the findings of behavioural economics. Economic decision-making is subject to a range of “behavioural biases”, whereby agents systematically depart from the behaviours implied by the assumptions of neoclassical microeconomics (for review see Rabin, 1998; DellaVigna, 2009).¹ Because behavioural economics is a relatively new sub-discipline and one that has generated a broad and rapidly moving scientific frontier, the precise implications of its findings for competition and consumer policy are hard to determine. Yet there is widespread agreement that such implications are important (Garcés, 2010; Rosch, 2010; Micklitz et al., 2011) and, moreover, that policymakers and regulators need to consider the possibility that behavioural biases cause considerable consumer detriment (Bennett et al., 2010; Lunn and Lyons, 2010). If so, there may be scope for devising new interventions to protect consumers (e.g. Faure and Luth, 2011).

¹ It is usual to refer to these phenomena as “biases”. Due to its prevalence, this terminology is unavoidable and is also adopted here. Yet it is arguably unfortunate. The term “bias” implies behaviour that is irrational or mistaken and hence damages welfare. But whether behaviour that violates standard economic rationality axioms causes detriment in real markets is an empirical question, the answer to which cannot necessarily be assumed.

This paper focuses specifically on the consumer telecommunications market, concentrating on domestic fixed-line telephony, mobile telephony and internet provision (with some references made also to television services, which may feature in bundled offerings). The core argument is that the decision-making environment faced by telecommunications consumers is unique and likely to make the sector prey to strong behavioural biases. The present contribution hence shares its motivation with other work that highlights specific markets in which behavioural biases might be expected to be particularly prominent, such as health insurance (Liebman and Zeckhauser, 2008). The broader aim is to employ relatively recent advances in behavioural research to illuminate issues that warrant specific attention from policymakers in the areas of competition and consumer protection.

An initial examination of telecommunications markets is immediately suggestive. Following widespread liberalisation, offerings have become increasingly innovative, complex and difficult to compare. Many consumers have proved reluctant to switch provider, with around half not even considering a switch (Xavier and Ypsilanti, 2008). Furthermore, Xavier (2011) documents how in some countries telecommunications companies have been subject to increased levels of customer complaints about service quality and bills not matching expectations (so-called “bill-shock”).

What follows is a systematic attempt to employ established findings in behavioural economics and consumer behaviour to locate possible barriers to effective competition and to identify potential sources of consumer detriment. Four aspects of telecommunications markets are identified, which in combination create a unique market likely to foment empirically established consumer biases. This general analysis is then employed to address two specific aspects of consumer behaviour of concern to policymakers: reluctance to switch provider and sub-optimal choice of tariff.

Section 2 identifies the unique combination of features of modern telecommunications markets and explains why they raise concerns from a behavioural economic point of view. Section 3 uses these insights to examine unwillingness to switch providers. Section 4 explores behavioural hypotheses relating to suboptimal tariff choice. While policy issues are referred to throughout, Section 5 summarises these and discusses the merits of policy responses, including the need for targeted research.

2. The Uniqueness of Telecommunications Markets

In a regular transactions for goods or services consumers have a degree of uncertainty regarding the respective private values of products. There is variability and hence a need for judgement with respect to, for instance, the flavour of foods, the durability of durable goods, the fashionability of clothes, the punctuality and comfort of train journeys, the

atmosphere in a favoured café, and so on. The extent to which the consumer gains surplus from the transaction selected depends upon the ex post value (or, if preferred, utility) at consumption, which must be evaluated ex ante at the moment of purchase. All consumer transactions contain a degree of uncertainty over private value and, hence, over consumer surplus. Private value is probably least uncertain when consumers make routine choices with regular feedback, such as which breakfast cereal to buy, but perhaps much higher when choosing among products not previously consumed or experienced, such as new electronic equipment. Yet, most transactions, the decision is whether to spend a certain amount of money for a given quantity of the product, which is consumed sometime thereafter.

The decision-making environment is different for the smaller number of products and services for which the consumer is billed following a variable flow of measured consumption, such as for domestic energy or telecommunications services. In addition to uncertainty over private value, there is uncertainty over usage and hence the final price that will be paid. The consumer may have a degree of choice over how this uncertainty is handled, through pre-payment options or flat-rate price components, but uncertainty remains nonetheless. With pre-payment, the uncertainty transfers to the amount of time it will take to run out of credit and thus to require a top-up payment. With flat-rate components, the uncertainty transfers to the likelihood of staying within usage allowances, after which higher rates usually apply. Where no allowance is imposed, there is the possibility of failing to use the service sufficiently to warrant a high flat-rate payment, in comparison to the measured rate. What is common to each case is that consumers must anticipate their own future behaviour.

With respect to domestic energy, usage is partly habitual and often partly regulated by machines, such as automatic heating systems and thermostats. Notwithstanding uncertainty over the weather, past levels of consumption (and therefore past bills) are likely to be a good guide to future consumption (and future bills). Telecommunications markets are not so simple.

2.1 Four Key Characteristics of Telecommunications Markets

Modern telecommunications markets have developed at least four non-standard characteristics. While it is probably the case that none is unique to telecommunications, the combination of them almost certainly is.

First, modern telecommunications consumers often face complex decisions that require simultaneous judgments involving multiple, distinct dimensions of private value. The decision to purchase a particular service contract is often taken simultaneously with the decision to purchase equipment, such as a mobile handset, wireless modem, or perhaps a

recording device for television programmes. The consumer may have to estimate quality trade-offs between the value of ongoing service and the immediate benefits of owning (or in some cases renting) the device associated with the offer. The complexity of simultaneous judgement is greater still where different services are bundled, e.g. fixed-line and broadband internet, broadband and television, etc.

Second, much of the value provided depends on factors unrelated to the product and provider. The private value of communication depends on who you communicate with and why: vital in emergencies; of higher value if you form a new relationship; of lower value if you become so busy that you under-use it; immediately improved by the discovery of a great new website; dependent on changes made by other organisations to on-line service provision; and so on. Telecommunications products enable access to people, information, entertainment, services and purchase opportunities. Private value depends on the perceived value of the combination of these often intangible benefits, which for the most part is not determined by the firm offering the product.

Third, and perhaps most obviously, telecommunication in the digital age is subject to an extreme pace of technological change. Consumers regularly make purchase decisions in relation to equipment and services they are yet to experience. This is less true of ordinary fixed-line telephony, despite the increased availability of various dial-up services, but is especially true of mobile and internet services. Size, speed, functionality, reliability and design of equipment is under constant development, such that repeat buying of products is rare or even impossible due to obsolescence.

Lastly, because telecommunications equipment and services now offer constant mobile access to immediate experiences, consumers make multiple and varied decisions in the market on a daily basis, requiring trade-offs between immediate costs and benefits and future ones. In simple terms, products provide consumption on tap, most of which is instant. Subject to the precise tariff structure, the consumer buys the continual right to purchase immediate social contact and entertainment, plus further opportunities to purchase a vast range of everyday goods and services for delivery. The volume and variability of instantly available offerings make this decision-making environment quite distinct from that of other billable services. For instance, from a decision-making perspective, domestic energy usage is primarily a matter of habit, with occasional adjustments required to maintain physical comfort. Communications equipment and services, on the other hand, are typically subject to multiple daily decisions relating to a very much broader range of experiences and opportunities of variable quality and duration.

2.2 Consumer Decisions in Telecommunications Markets

Orthodox microeconomic models of consumer behaviour treat telecommunications products similarly to other products. The consumer chooses the combination of price and quality that maximises utility, incentivising firms to produce quality offerings at minimum cost. Yet classic market failures may occur. Large firms, perhaps especially former state monopolies, may be able to exploit market power. The insights of information economics caution that there is likely to be an asymmetry between firms and consumers with respect to the details of service contracts and the capability of products based on developing technologies. Telecommunications markets may also generate significant network externalities. These market failures have been identified in many markets and telecommunications markets are not unique in firm concentration, technological sophistication, nor capacity for network externalities. Yet, to a behavioural economist, modern telecommunications markets are unique, given the combination of characteristics identified.

Consider first the decision to purchase equipment and sign up to a service. To assess the private value of a typical offering, the consumer must simultaneously judge the user-friendliness and capability of multi-function equipment, alongside the quality and reliability of the enormous array of experiences to which the equipment grants access. Where the equipment and associated service are new to the consumer (e.g. when they first encounter mobile internet, faster communication, new forms of communication such as social networking or picture messaging, games, video and audio, or more likely a combination of all of these), they may have little in way of experience to fall back on. Most times when the consumer returns to the market, it will have changed. They will need to predict their own usage of another new piece of equipment and the still broader range of communication and entertainment experiences to which it grants access. To the difficulty of judging the private value of the equipment, service and potential communications experiences, must then be added the difficulty of judging the merits of the contract terms and the tariff structure. Note that even here the calculation is not as simple as predicting a level of usage and then seeking to minimise the cost, since the optimal level of usage is not independent of the tariff.

Thus, the first three properties of telecommunications markets identified in the previous section (multiple value judgements, valuing varied experiences, speed of technological change) mean that the consumer's initial purchase decision is fiendishly complex and is likely to involve much greater uncertainty over private value than is the case for consumer goods in general. There are at least three likely behavioural consequences. First, it is well established that consumers find complexity itself off-putting (Iyengar et al., 2004), leading them to avoid complex decisions and to fall back on rules of thumb or heuristics. Second, certain behavioural biases, including the endowment effect and status quo bias, are known to be stronger when private value is harder to assess (Horowitz and McConnell, 2002; Sayman and Öncüler, 2005). Third, both complexity and uncertainty over private value mean

that the market is likely to be prone to “behavioural convergence”, whereby consumers copy the decisions of other consumers (e.g. Bikhchandani et al., 1998; Huang and Chen, 2006).

Thus far, we have considered only the purchase decision. But the fourth property of telecommunications markets, the requirement for ongoing decision-making, is also likely to have behavioural consequences. Even where the tariff consists of a substantial flat-rate component, consumers need to ration their usage relative to allowances of minutes, texts and megabytes. These decisions are again complex, but they involve another key dimension from the perspective of behavioural economics: time. Decision-making that trades-off immediate benefits and costs against future benefits and costs typically reveals time-inconsistent preferences (Frederick et al., 2002; DellaVigna, 2009). The immediate is valued disproportionately highly relative to the future, such that most people discount time hyperbolically rather than exponentially, at least to a first approximation. One consequence is that “buy now pay later” transaction may lead consumers to over-consume, depending on the extent of temptation. In response, self-aware consumers may seek pre-commitment strategies, which come at a cost and vary in success. In short, even consumers who choose good deals for their intended usage may get poor value with respect to their actual usage.

The same decision-making structure affects other markets, such as domestic energy markets, where consumers must weigh up the immediate comfort of being too cold or too hot against the size of a future energy bill. But the frequency and variety of such decisions is very much greater in telecommunications markets, where a consumer in possession of a mobile device has instant gratification constantly a click away, at a future cost. Furthermore, that future cost is likely to be less easily determined from experience, given the lesser degree of familiarity with the product, multidimensionality of the product and complexity of tariff structures. In principle, firms might perceive competitive advantage in simplifying the decision-making environment for consumers, but there is little reason to presume that the market will provide such assistance. Where total price in a consumer markets is not immediately apparent upfront, it may be in firms’ interests to obfuscate prices (Gabaix and Laibson, 2006) or to capitalise on consumer mistakes (e.g. Grubb, 2009).

In summary, a unique combination of features of the telecommunications market means that consumers are continually confronted with decisions of a highly complex nature involving multiple dimensions of uncertain value, with costs and benefits spread from the immediate to months into the future. The price they pay depends not only on which offering among very many they sign up to, but also on their ability to predict and control their own future behaviour. This level of complexity, uncertainty and the requirement for time-consistent decision-making means that empirically established behavioural biases are likely to be particularly prevalent in modern telecommunications markets.

3. The Behavioural Economics of Switching

The previous section provides the foundations for analysing an issue that has preoccupied policymakers: the apparent reluctance of consumers to switch providers. This is the subject of regular consumer surveys that have informed systematic investigations into switching in telecommunications markets (see Xavier, 2011, for review). The primary focus is on what prevents more consumers from switching, with much less attention usually paid to estimating the size of the potential gains to consumers. The chief suspect is the costs to consumers of making a switch and the need for policymakers to find ways to force suppliers to cut such switching costs. Based on the above analysis, this section proposes an alternative view that is more consistent with evidence from behavioural economics and has alternative implications for policymakers also. The alternative view begins by returning to how switching costs are initially defined.

3.1 *The Concept of Switching Costs*

In Klemperer's (1987) original demonstration of the impacts of switching costs on competition under oligopoly, switching costs were subject to a three-way categorisation: (1) transaction costs, which covered the time and effort required to complete the administrative process; (2) learning costs, which entailed the time and effort required to research other products and to learn to exploit brand-specific attributes; and (3) artificial costs imposed by firms, such as discounts for loyalty. Thus, costs were identified with time, effort or price. Subsequent influential work by Klemperer (1995) expanded the concept of switching costs to cover not only actual costs arising from expended time, effort and money, but also perceptions of costs. More recent authors go so far as to define switching costs as "the perceived economic and psychological costs associated with changing" (Jones et al., 2002, p.441, italics added), or "the real or perceived costs that are incurred when changing supplier" (Xavier and Ypsilanti, 2008, p.14, italics added). This equivalence between actual and perceived costs is arguably immaterial for economists aiming to build models of how firms might respond to consumer loyalty and the equilibrium prices that might ensue. But for policymakers, regulators, or researchers seeking to understand root causes of consumer behaviour, whether switching costs are genuinely high or misperceived to be high may alter conclusions.

There is a point of scientific inference at issue here too. Expanding of the concept of switching costs to include perceptions keeps faith with rational utility maximisation. Thus, if a consumer fails to make a beneficial switch, the inference is made that some subjective "psychological cost" must have outweighed the potential gain. This inference is flawed, because there are other possibilities. The consumer may have made the decision on grounds other than self-interested cost-benefit analysis; or may have undertaken no decision-making process at all; or may simply have made a mistake.

The inference that an observed failure to act in the face of a realisable gain must imply a countervailing psychological switching cost is to treat rational choice theory as unassailable and hence to engage in circular logic. This precludes other feasible explanations and confuses different explanations. Where switching costs are defined to include perceived costs, misperception of switching costs cannot occur by definition – what is perceived is the switching cost as defined. Yet misperception of switching costs might be a crucial part of the explanation for non-switching. Misperceptions, motivations other than self-interest, and deviations from standard rationality axioms, are not switching costs. In what follows, therefore, switching costs are considered to be only actual costs of changing supplier, in terms of time, effort and money.

3.2 The Role of Switching Costs

Taking this approach, there is evidence to suggest that while switching costs have a significant impact, they may not be the main reason for the apparent disinclination to switch. Across the full range of telecommunications services, the large majority of consumers who do switch state that the process was relatively easy – only a small minority experience difficulty (Xavier and Ypsilanti, 2008; Ofcom, 2010). Moreover, the majority of consumers of fixed-line, mobile and internet services do not even consider switching provider over a twelve-month period. While some consumers (when prompted) cite hassle and not having the time as reasons for not switching, suggesting perceived switching costs do matter, more common reasons cited surround loyalty to present suppliers and worries or uncertainty about alternative suppliers. These reasons do not concern switching costs, but instead suggest worries about ending up with an inferior product, or perhaps a conservative preference for the existing provider.

One interesting test of the importance of switching costs is the impact of mobile number portability (MNP). The cost of changing mobile number when switching supplier would seem *ex ante* to be high. In an international analysis of cross-sectional time series, Lyons (2006) finds statistically significant increases in churn following the introduction of MNP, provided the switching process is sufficiently short. Yet the effect of MNP on switching has nevertheless turned out to be much smaller than anticipated (Xavier and Ypsilanti, 2008). In the UK market, perhaps the most regularly surveyed and studied, switching has declined in recent years despite the introduction of MNP (Xavier, 2011).

Overall, it is likely that switching costs deter switching, but responses to consumer surveys and the continuing low level of activity despite falling switching costs suggests other factors may cause reluctance to switch.

3.3 The Endowment Effect and Loss Aversion

Xavier (2011) points to the influence of the “endowment factor”, which he defines as the tendency for consumers to “value what they have more than what they might have” (p. 21). The reference is to the “endowment effect” (Knetsch, 1989; Kahneman et al., 1990), whereby experimental subjects appear to value a good that is owned more than the same good when not owned. The experiments show that, typically, we state a much higher minimum price to sell a good we own than the maximum we will pay to buy the same good, and that we are disinclined to trade a good we own for one we do not, but which we would prefer if offered a simple binary choice where neither good was owned. The hypothesis is that whatever psychological mechanism underlies this tendency is also behind consumers’ unwillingness to switch providers. The decision structure is analogous, since a proportion of consumers appear to require the prospect of large gains before they will consider a switch and to stick with providers they would not choose were they to enter the market afresh.

The endowment effect provides a good example of how established behavioural phenomena might interact with the uniqueness of the telecommunications market. One empirical regularity is that the endowment effect strengthens with uncertainty over private value (Horowitz and McConnell, 2002; Sayman and Oncular, 2005), such that whatever is presently owned can be valued at three, four, five, or even more times higher than when it is not owned. As argued in Section 2, telecommunications offerings are likely to be subject to greater uncertainty over private value than most consumer goods. Thus, to the extent that the psychology behind the endowment effect affects switching, it should be especially strong in modern telecommunications markets. Further empirical research is needed to establish and gauge the strength of the link between the two phenomena, but the evidence from consumer surveys is suggestive.

From a policy perspective, however, establishing the nature of this connection is only part of the story. The policy implications are not unambiguous, because they depend on what causes the effect.

The most widely accepted explanation is loss aversion. Kahneman and Tversky (1979) developed Prospect Theory as a descriptive theory of decision-making under risk. In monetary gambles experimental subjects’ choices implied that they weighted losses about twice as strongly as equivalent gains. Tversky and Kahneman (1991) incorporated loss aversion into a model of consumer choice, according to which consumers assign about twice as much weight to giving up an ordinary consumer good as to gaining the same good. Applied to willingness to switch telecommunications providers, the implications of this theory are striking. Loss aversion on this scale means consumers may be foregoing substantial gains, because alternative providers would need to provide several times the

consumer surplus of the current contract before consumers would be willing to switch. The suggestion of Tversky and Kahneman's model is that this behaviour reflects a genuine consumer preference. The account therefore leaves policymakers in the awkward position of having to determine whether freely formed preferences are detrimental and whether consumer policy should aim to override them, through public switching campaigns, promoting shopping around, and so on.

However, neither the relevance of the endowment effect to decisions made in real markets nor the account based on loss aversion are uncontested. Plott and Zeiler (2005; 2007) managed to overcome the endowment effect in experiments by training subjects to realise they were missing out on ex post gains. List (2003, 2004) has shown through field experiments that the endowment effect is attenuated among experienced dealers in a real market. These findings suggest the effect may be less prevalent where consumers have experience. Kling et al. (2010) and Lunn and Lunn (2011) have produced dynamic models of the endowment effect that suggest foregone gains may be temporary, in both cases with some empirical support. These findings and alternative accounts question whether non-switching telecommunications consumers forego additional surplus on a substantial and ongoing basis. Measured over a longer period the behaviour may be less disadvantageous than it initially appears from a snapshot of current offerings and market shares. Thus, the outcome of this scientific debate about causes of the endowment effect and the closeness of the analogy to consumer choice has implications both for the extent of consumer detriment and potential policy responses.

3.4 Status Quo Bias

The endowment effect is often linked to the broader concept in behavioural economics of "status quo bias". Samuelson and Zeckhauser (1988) first reported the tendency of individuals to stick with status quo choices after observing that new employees at Harvard University held retirement savings in substantially different portfolios compared with equivalent employees of longer duration. Experiments then confirmed the generality of the effect. For instance, if opinion survey respondents are asked to state which of two options is best, simply informing them as to which is the current option biases responses in that direction (Kahneman et al., 1991). This finding extends to surveys on choice of contracts for electricity supply (Hartman et al., 1991).

The implications of status quo bias again depend not only on how strong an influence it is, but also on its cause. Loss aversion is again a possibility, but this requires the boundaries of loss aversion to be stretched, since status quo bias arises in situations where the decision-maker does not personally give anything up. If status quo bias is caused by loss aversion, then individuals must be averse to losses accruing to others and to society generally. There are alternative explanations. The bias may be a general defence against unintended

consequences. It is arguably reasonable to infer that the present option is less likely to result in an unanticipated bad outcome than an untried option. This logic is echoed in switching surveys, where some non-switchers worry about unanticipated mishaps during the switching process (Xavier and Ypsilanti, 2008). Another possible explanation is that the status quo signals the preferences of other people. Facing an uncertain choice, the behaviour of others can convey helpful information, especially where an individual believes others may understand the available options better. Bikhchandani et al. (1998) coined the term “information cascades” to describe such inferences based on the choices of others, the existence of which is supported by extensive empirical evidence (Hirschleifer and Teoh, 2003). The unique combination of features that characterises telecommunications markets, especially complexity and speed of technological change, makes them good candidates for information cascades and other forms of behavioural convergence such as herding (Huang and Chen, 2006; Rafaat et al., 2009), which may draw consumers towards providers with substantial market share and increase loyalty to such providers.

Any status quo bias effectively presents a barrier to entry for new telecommunications providers, making it harder for them to attract customers. If loss aversion is to blame, policymakers face the same issue as with the endowment effect: should they seek to challenge consumers’ freely formed preferences? On the other hand, if uncertainty about quality and concerns about unintended consequences are to blame, ways might be explored to guarantee quality and to increase trust in multiple providers.

3.5 Ambiguity Aversion

The greater uncertainty over private value faced by telecommunications consumers also suggests another potential behavioural influence on switching: “ambiguity aversion”. It is well-known that we tend to be risk-averse, perhaps less well-known that we are more averse to certain kinds of uncertainty. Ellsberg (1961) showed that people prefer an option where risk can be quantified to one where it cannot, even if the actual risk faced is the same, i.e. we dislike ambiguity about the level of risk.² Ellsberg’s work on ambiguity aversion was extended by Heath and Tversky (1991) and again by Fox and Tversky (1995), who developed and tested the “competence hypothesis”. The idea is that ambiguity aversion results from our feelings of competence, defined by how much we feel we know of what could be known. The competence hypothesis is supported by experimental evidence, showing that we prefer to take equivalent risks in relation to familiar events than unfamiliar events. Put simply, the more we know of the domain in question, the more willing we are to take on risk.

² Ellsberg showed this through examples of people’s willingness to bet on the colour of balls drawn from an urn. We instinctively value a bet more highly when we know that an urn contains balls of two colours split 50-50 than when we know that the urn contains balls of two colours in an unknown proportion, although the expected value of such bets is identical.

Given technological change, multiple dimensions of value and ongoing innovation in tariffs, only a few consumers are likely to feel highly competent when selecting telecommunications equipment and contracts. Consequently, consumers may be unwilling to accept risks that they might accept in markets where they feel more competent. The competence hypothesis is, in effect, a heuristic: we assume that our familiarity with a domain of reasoning is a useful guide to how accurately we will be able to judge risks in that domain. How beneficial the heuristic is depends on how good this assumption is. Thus, this behavioural phenomenon again raises the awkward possibility for policymakers that encouraging consumers to switch is not necessarily beneficial.

Empirical work by Wilson and Waddams-Price (2010) provides insight here. In a detailed study of the residential UK electricity market, these researchers had access both to switching decisions and actual usage patterns. Between 20 and 32% of consumers who tried to switch to a cheaper supplier in fact ended up paying more. Less than 20% switched to the supplier offering the highest saving. This means that even though the majority of switchers save money, the chance of a costly mistake when switching is substantial. The findings provide an estimate of the risk that consumers make a loss when switching in the residential electricity market; a risk that is likely to be higher for telecommunications products. Electricity is a standardised product consumed out of habit, with a relatively straightforward tariff structure and a market in which consumers have relevant experience. Given this, consumers ought to feel less competent when assessing telecommunications offerings than when considering electricity offerings. For many, therefore, reluctance to switch contracts may be sensible: with a substantial risk of making a mistake and thus paying more, attempting a switch may not be worthwhile.

Hence, for policymakers, the potential role of ambiguity aversion is problematic. Even where potential benefits from switching exist, where the gains are substantial and where consumers are successfully urged to switch, actual gains may not be realised. Targeted research is needed to quantify the risks faced by marginal switchers and the likely returns to policies that successfully promote switching.

3.6 Procrastination and Inertia

Other behavioural findings may also be of relevance to switching. Because we value the immediate much more highly than the future, we also tend to be more willing to give up time in the future to do effortful tasks than we are to give up time in the present. Models of procrastination (e.g. O'Donoghue and Rabin, 2001) show how hyperbolic discounting implies that we may decide to give up time tomorrow to complete a boring task such as wading through competing contracts for telecommunications services, but that when tomorrow

comes around we take the same decision and put the task off again, and so on. Inertia may also be produced simply by inattention: in the absence of a salient signal of the benefits, we simply do not consider switching. Thus, even consumers who believe they would gain, or would believe so if they paid the matter attention, may fail to get around to switching.

Unlike the previous three behavioural biases, it is not clear that procrastination is likely to afflict telecommunications more than other markets. Inertia, on the other hand, may be increased by the complexity of the telecommunications market, since complexity is known to be off-putting to decision-makers (Iyengar et al., 2004).

3.7 Summary of the Behavioural Economics of Switching

The behavioural economic analysis of switching offered in this section has related five empirically established phenomena to the likelihood that consumers switch provider. The uniqueness of the telecommunications market, entailing greater complexity and uncertainty over private value than other consumer markets, means that four of these effects (the endowment effect, status quo bias, ambiguity aversion, inertia) can be expected to have a stronger influence in telecommunications. These phenomena are psychological regularities in human decision-making that mostly depart from the model of the consumer as a rational utility optimiser. They are not costs, psychological or otherwise, associated with switching, though they may be influenced by various perceived costs and risks.

Because the causes and prevalence of these phenomena remain the subject of scientific debate, they raise more than four potential explanations for unwillingness to switch. More evidence is required to allow researchers and policymakers to determine what combination of these forces accounts for observed patterns of switching. Importantly, the behavioural analysis raises the possibility that while the extent of switching in the market can be considered an indicator of healthy competition, the widely adopted approach of encouraging consumers to switch and shop around may not necessarily lead to consumer gains. This thorny problem for policymakers is considered further in the final section.

4. The Likelihood of Suboptimal Choice

As with other billable services, when telecommunications consumers choose between contracts, they must estimate future usage. Ultimate usage is determined by the cumulative effect of very many separate decisions about whether to make a call, send a text, read a blog, watch a video stream, play a game, and so on. Mobile telecommunications equipment means these decisions can be taken continually throughout the day. At any time consumers can incur future liabilities in return for instant rewards of great variety and uncertain value. The extent to which modern telecommunications markets present consumers with such

decisions is probably unprecedented and brings another range of behavioural phenomena into play, those relating to time consistency and forecasting biases. This section examines the potential implications of this unusual time structure of decision-making.

4.1 Self-Control

Time inconsistent preferences mean that we find it hard to resist immediate temptations for which we will pay a price at a later stage – people experience problems of self-control. This phenomenon has been observed in a number of markets (DellaVigna, 2009). It is therefore possible, even likely, that for a proportion of consumers day by day usage exceeds the level that they would more generally desire. In effect, parts of the telecommunications market have become a constant offer of zero-interest credit to purchase from a range of social and entertainment experiences. In this sense the market bears a resemblance to the markets for credit cards and store cards. Consumers in these markets are known to find it difficult to select optimal contracts because of failure to control usage (e.g. Ausubel, 1999). Self-control problems are likely to be compounded by online content that may be partly addictive, such as gambling opportunities, gaming, social networking, shopping or pornography.

4.2 Pre-Commitment, Insurance and Peace of Mind

People are frequently aware of their own self-control problems and field evidence shows that we seek pre-commitment strategies to constrain our future behaviour (Ariely and Wertenbroch, 2002; DellaVigna and Malmendier, 2004). From the consumer's perspective, pre-commitment may make sense but can be costly. Gym-goers pay large upfront membership fees to incentivise themselves to exercise, but some undertake fewer gym sessions than they intend and thus experience little benefit at considerable cost. Smokers buy expensive small packets to try to reduce the amount they smoke, thus paying more per cigarette than they would buying cheaper large boxes. Indications of self-control costs in telecommunications include consumers who continue with pre-pay contracts despite the generally lower usage cost of bill-pay. Pre-payment offers a mechanism to aid self-control – one frequently imposed on children by parents.

An alternative approach to self-control is to choose a tariff that appears to offer insurance, such as a flat-rate or three-part tariff.³ Pure flat-rates are often available for internet access and local direct-line telephony, with three-part tariffs more common for mobile services. Lambrecht and Skiera (2006) provide direct evidence of consumer detriment associated with

³ A three-part tariff involves a fixed fee in return for an allowance (or suite of allowances such as calls, texts and megabytes) of units of the product supplied at zero marginal price, with units consumed beyond the allowance charged at a positive marginal price, often a very much higher unit price.

such tariffs from an analysis of data from a German internet provider. The study examined usage records over five months of approximately 11,000 customers choosing among three types of tariff: a flat-rate and two three-part tariffs with different download allowances. The study built on a previous debate regarding the extent of detriment due to suboptimal choice of tariff in local fixed-line telephony (e.g. Train et al., 1987; Miravete, 2002), the context for which preceded much of the development of the unique features of modern telecommunications markets. Lambrecht and Skiera found many consumers on the wrong tariff. One-in-five on the flat rate would have had a lower bill on another tariff in each of the five months studied. More than half of the consumers on the three-part tariff with the higher fee would have fared better on one of the other two tariffs, mostly the one with the lower fee and allowance. A smaller proportion on both three-part tariffs (around 5%) would have been better on a higher fee or flat rate. Overall, the effects were large: the firm was more than doubling its customer lifetime value for consumers on the wrong tariff.

This level of sub-optimal choice, identified over a choice of just three tariffs at a single provider, is striking and invites further investigation. To some extent it may reflect reluctance to switch tariff, for reasons discussed in the previous section. But when Lambrecht and Skiera surveyed customers of the provider, they found evidence that uncertainty over future usage played a role. The preference for the flat rate was associated with a stated desire for insurance against high bills, overestimation of likely usage and enjoyment of surfing without simultaneously worrying about increasing the bill (the “taxi-meter effect”). The implication is that consumers are concerned about the relationship between intended use and actual use and will pay to neutralise this concern.

Arguably, by paying for insurance against bill-shock and for the peace of mind of surfing without incremental charge, consumers on flat rates pay more for what is, in effect, an enhanced product. Yet they pay very much more. We do not know how the relevant consumers would respond if they became aware of the extent of the gap between the price presently being paid and what could be paid for the same level of usage, even if to some degree they benefit from peace of mind.

4.3 Overconfidence and Miscalibration

There exist alternative explanations for the sub-optimal consumer choice observed by Lambrecht and Skiera (2006), however. Two related but distinct phenomena, often categorised under the umbrella term “overconfidence bias”, occur when people estimate future outcomes. First, we tend to be too optimistic in relation to our own outcomes. Second, we think our assessments are more accurate than they in fact are, so that the probability of outcomes far removed from our assessments are underestimated – we “miscalibrate”. Overconfidence of both types has been recorded in market settings (DellaVigna, 2009).

An overly optimistic consumer will overestimate their ability to increase or decrease usage as desired. A miscalibrated consumer will underestimate variability in usage. Thus, overconfidence of both types means that both underestimation and overestimation of usage are more likely. Consequently, we should expect to observe, simultaneously, consumers whose usage is too low on a flat rate and other consumers who overuse on a measured rate. In other words, overconfidence offers an alternative explanation for the results of Lambrecht and Skiera.

Grubb (2009) shows that overconfidence among consumers can also explain why three-part tariffs are both offered by providers and accepted by consumers. If consumers erroneously believe that they will make sufficient use of but not surpass the allowance, they will find three-part tariffs attractive. Meanwhile firms will make extra profits from those who pay for service they do not use and those who pay high rates because they exceed allowances. The popularity of three-part tariffs is hard to explain through insurance, taxi-meter effects or overestimation of usage, none of which account for the high rates typically applied above the allowance, which consumers appear to think they will not end up paying. Analysing transaction data for student mobile telephone contracts, i.e. data from consumers who had recently made an active choice, Grubb (2009) confirms that a large proportion of consumers are on suboptimal tariffs. Many consume insufficiently to justify a high flat fee, while a smaller but still substantial proportion overshoot allowances and receive higher bills than necessary. Again, the effects are large relative to average bill size.

4.4 Summary of the Behavioural Economics of Suboptimal Choice

There is accumulating evidence that, in addition to reluctance to switch to better deals, telecommunications consumers who actively choose do so suboptimally, because intended usage does not match actual usage. This patterns can be linked to established biases surrounding self-control and overconfidence in estimation of future outcomes. For large proportions of consumers in both internet and mobile telephone markets the size of errors is significant in relation to the size of bills. These findings are consistent with the incidence of “bill shock”, which is one of the primary grounds for the increasing volume of complaints about suppliers (Xavier, 2011).

From a policy perspective, three-part tariffs are arguably an indication of ineffective competition. Theoretically, such tariffs are economically inefficient, since they contain large ranges over which consumers face zero marginal cost and hence are likely to consume suboptimal quantities. If consumers make good choices, there is also little in the way of a theoretical rationale for the high rates charged for exceeding allowances. Empirically, these tariffs appear to exploit decision-making biases that result in a proportion of consumers

making poor decisions. While these conclusions are presently drawn from a relatively small pool of studies, present evidence suggests that consumer detriment is considerable.

5. Policy Implications

The digital revolution and the enormous advances in information and communications technology that have occurred in recent years, and may continue to occur for some time to come, offer consumers opportunities for communication and entertainment that previous generations would doubtless have envied. Nothing contained in this article is intended to suggest that the overall benefits of these developments are not very large indeed. However, there are signs that competition within the telecommunications sector may be less effective than in other markets and that a sizeable proportion of consumers forego gains and choose suboptimal products.

The need for consumers to make simultaneous judgements across multiple dimensions of value, to assess the value of hugely varied and often new experiences, to understand the possibilities afforded by new technology, and to make many time-consistent decisions per day, makes telecommunications markets unique. This decision-making environment is likely to foment behavioural biases, leading to a level of potential detriment that warrants attention from policymakers. This final section summarises policy challenges and tentatively suggests ways that they might, if not be met, at least be approached, including via improvements in understanding through targeted research.

Consumers' willingness to switch providers is considered an indicator of healthy competition. Yet while active consumers might generally be required for effective competition, the observation of a low level of switching in a market does not necessarily imply a positive outcome from policies that successfully manage to promote switching. Such an outcome requires that the marginal switchers who are spurred into action take beneficial decisions.

Two as yet unanswered empirical questions are key from a policy perspective. First, how much surplus are consumers sacrificing by not switching to lower cost providers over the medium to long term? This question is, in principle, answerable through research that compares actual usage to available offerings among panels of consumers. The second question is less easy to answer. Why are consumers reluctant to switch? Section 3 considered a number of hypotheses, but concluded that they lead to different policy implications.

For instance, loss aversion is a descriptive rather than normative account of decision-making. If its role can be firmly established, the implication is that consumers have disadvantageous preferences; an arbitrary attachment to their existing provider that leads them to forego gains. If so, then encouragement from regulators and consumer protection organisations to overcome this attachment and to switch, through advertising, awareness campaigns, or other salient ways to promote switching, might appear reasonable. Yet such interventions adopt the strident policy position that consumers making free choices in this market do not know what is good for them. Similar policy interventions might assist consumers to overcome procrastination or inertia.

However, while failing to switch to the optimal provider is clearly not ideal, neither is switching for little or no gain. It remains possible that consumers' disinclination to switch is more reasonable than it initially appears, based on the not insignificant probability of making an error when choosing between complex deals involving products of uncertain private value dependent on uncertain future behaviour. Consumers may correctly identify that, even knowing that there are gains to be made, they lack the expertise to harvest them reliably. If so, some policies designed to boost activity could backfire, prompting consumers to waste time and effort trying and failing to save significant amounts, or worse still signing up to inferior deals. Instead, policy might need to focus on ways to increase trust and guarantee quality in a market where consumers face uncertainty and cannot be expected to locate best value.

Since the appropriate policy response depends on the cause of low switching, research that might identify that cause more clearly would be of great value. One possibility is to combine behavioural experiments and surveys with data on market behaviour at the individual level. In addition, research might focus on the marginal switcher. Do those who switch provider in response to promotions or campaigns make significant gains? What proportion make a loss and what are their characteristics?

Section 4 highlighted good evidence that at least some consumers who do switch make routinely suboptimal decisions when deciding between tariffs, because of the difficulty matching intended and actual usage. The extent of consumer detriment could be even greater than estimated by the studies cited, which centre on a single firm or population of students, so policymakers would again benefit from research that estimates lost consumer surplus more accurately.

Flat rates and three-part tariffs can be partly justified on the grounds that consumers enjoy consumption more when there is no meter continuously ticking away. But where bills are effectively being doubled by underuse and rates for overstepping allowances greatly exceed average per unit cost, there is a strong suggestion that flat-rate components within tariffs

are exploiting consumer biases, making supernormal profits from those who overestimate and underestimate their usage respectively. Here, regulators might want to consider stronger interventions that limit the magnitude of higher rates relative to average per unit cost or that mandate particular types of salient feedback to those consumers who are paying more than they could.

One potential avenue for policymakers here might be to exploit the available technology to assist consumers in their decision-making. For instance, providers could be mandated to disclose easily interpretable information that can be used to monitor usage during the current billing period, in addition to feedback on previous periods. There is scope for experimentation here to determine the best form of disclosure. Providers, who are already able to offer a sophisticated range of interactive services, could be mandated to give consumers one-click access to easily interpretable data on their remaining minutes, texts or megabytes, just as they can observe the remaining power in a mobile battery. Such simple mechanisms might do much to aid self-control and improve usage estimates, and could be easily piloted for effectiveness. Given that technological advances in telecommunications give us such unprecedented access to innovative services and media, it would seem reasonable that they can also be used to make services more “decision-friendly”.

Finally, one oft-repeated criticism of behavioural economic analysis is that it can lead to excessive intervention in markets and hence to higher costs. Two points need to be made in response. First, behavioural economics also suggests ways in which potential interventions can be assessed experimentally prior to implementation, to increase the likelihood of beneficial outcomes. Second, while the focus of the present discussion has been on seeking new solutions, the analysis also suggests there may be old regulations that ineffective and could potentially be scrapped. Miklitz et al. (2011) describe the modern consumer legal system as “saturated with information duties” (p. 272). Yet stringent requirements on firms to provide detailed information may do little to improve consumer decision-making and can, in some cases, even deter consumers from being active by increasing the perceived complexity of offerings. Thus, behavioural insights have the potential to increase the efficiency, as well as the effectiveness, of competition and consumer policy.

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