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Consumer switching intentions for telecoms services: evidence from Ireland

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Abstract

Despite long-standing market liberalisation and efforts to reduce switching costs, many consumers have never switched telecoms provider. This paper investigates how consumer and service characteristics relate to switching intentions, using a sample of fixed-line broadband, mobile telephony and landline telephony customers from a 2015 survey conducted by ComReg, Ireland's National Regulatory Authority. We add to previous work by examining a rich array of personal and service characteristics while controlling for both bill shock and expected gains from switching. We find that long-standing subscribers who have never switched are exceptionally resistant to switching. Bill shock is strongly associated with intention to switch, especially among those more inclined to switch. A similar effect arises for expected gains, especially gains over 20%. These results are consistent with both a preference for fair treatment and with behavioural barriers to switching that require large gains to overcome. The effects of bundling and of the few socioeconomic, supplier or application use characteristics that are statistically significant are smaller and not consistent across markets. This implies that willingness to switch is not simply a characteristic of certain social groups, but is more complex and context dependent.

JEL classifications: L96, D12, D03

Key words: telecommunications services, consumer switching, Ireland

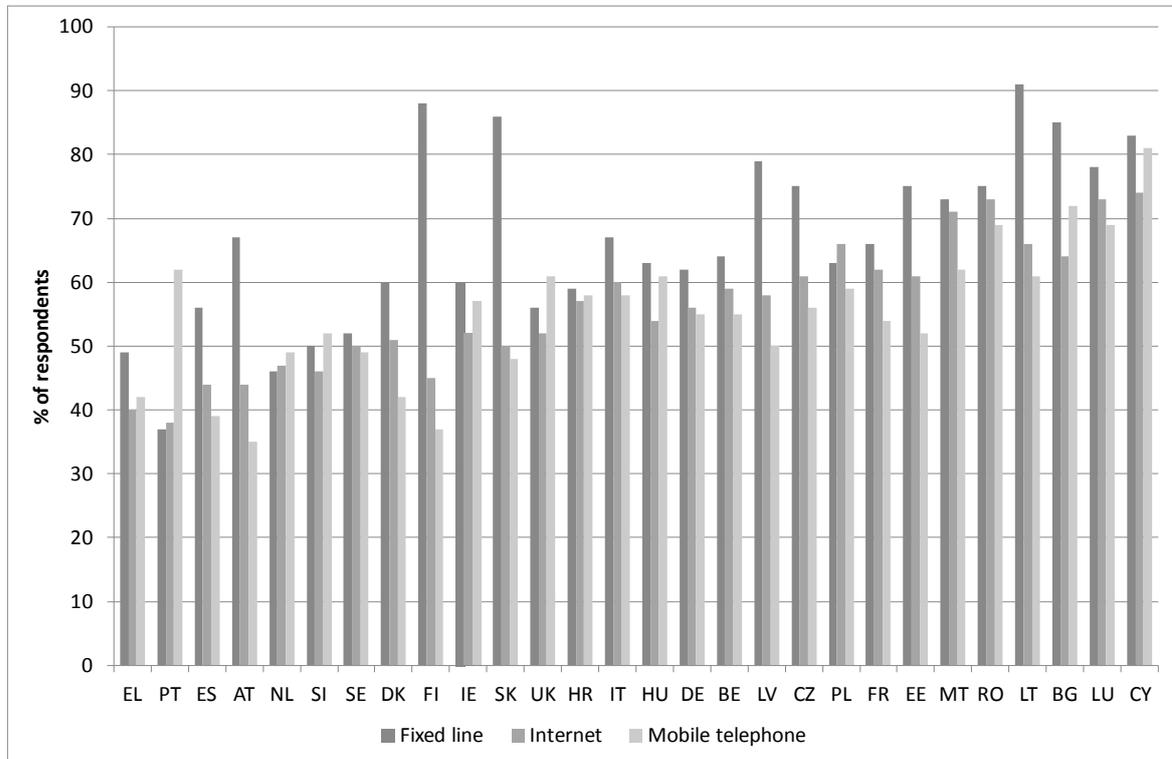
1. Introduction

Retail and wholesale provision of many formerly monopolised network services has been liberalised and deregulated in recent decades. Telecommunications services in most countries are relatively far advanced along this path, with energy and public transport services at varying stages in different countries. A key goal of the deregulation project is that effective competition should emerge and prove sustainable. When telecoms services such as broadband and mobile telephony were newly-introduced and service adoption was rising fast, most retail competition involved attracting new adopters. As these services have matured, attracting wholly new customers has become relatively less important. In this new environment, the willingness and ability of consumers to compare suppliers' offers and to switch if sufficiently good deals are available drive the incentives suppliers have to compete for existing service users. Competition may show itself through substantial inter-operator switching by consumers or through attractive offers from suppliers to retain their customers (and probably some of both). However, if many consumers are never willing to consider switching their supplier, the effectiveness of competition in a mature market will be reduced. Even if competition for active customers is effective, inactive consumers may be left paying higher prices or, as telecoms services are increasingly used by multiple household members in different ways, the inability of households to switch to the offerings best suited to their needs may result in lost consumer surplus.

Yet a persistently high proportion of consumers report that they have never switched provider, and this behaviour is broadly consistent across different telecoms services and national markets. To illustrate, Figure 1 below shows results from a 2014 Eurobarometer survey that asked consumers in 28 European countries about whether they had ever switched supplier for three telecoms services. There is some variation between countries,

but across Europe and for all services there are significant numbers of people who have never switched provider.

Figure 1: National shares by telecoms service of respondents answering "No, never" to "Have you or someone in your household changed service provider for the following services?" EU28 countries, January 2014



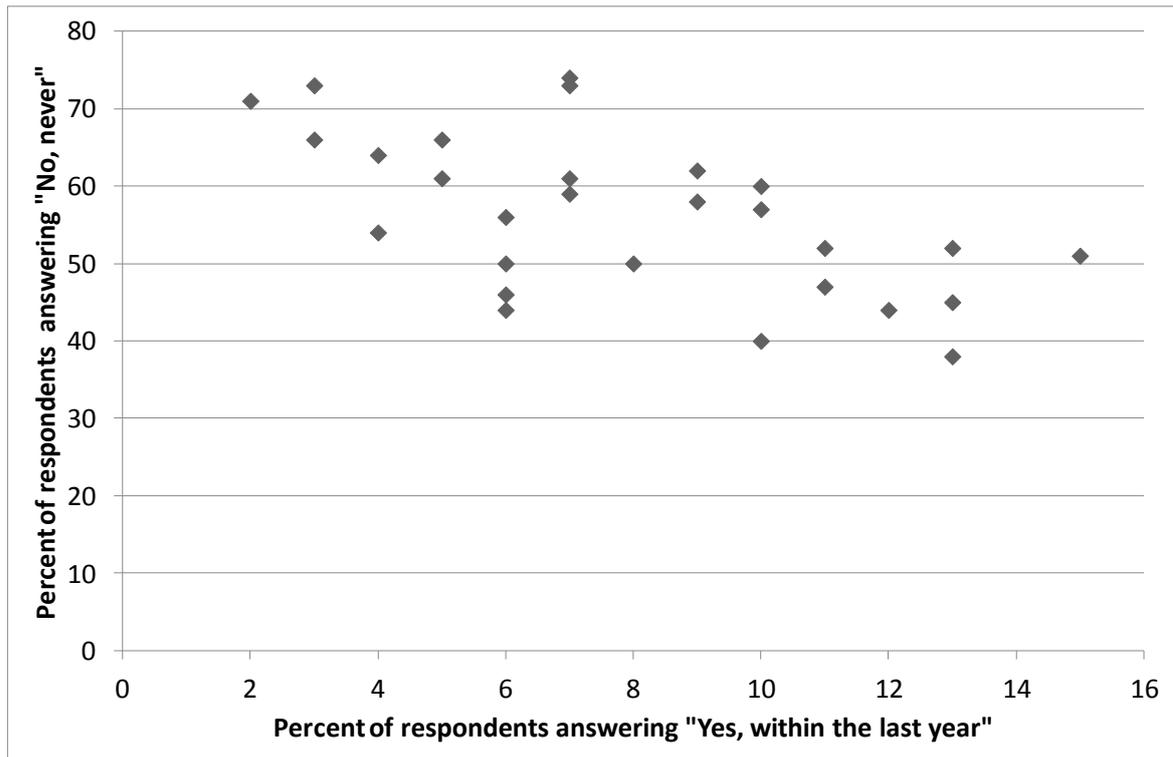
Source: analysis of European Commission 2014, QB21.2 - QB21.4

Could this simply be a temporary phenomenon as competition becomes established?

Several of the most highly developed, longest liberalised European telecoms markets are to the left of Figure 1, which suggests not. Another way to check this is to compare the stock of people who have never switched with the flow of recent switchers. If rapid switching is eliminating the stock of non-switchers, markets with high switching rates should have low stocks of non-switchers. This is illustrated in Figure 2 below. There is some hint of the expected negative slope in this relationship, but even markets with 13-15% annual switching rates still have 40% or more non-switchers. On the face of it,

therefore, having a group of active switchers in a market has little effect on the subgroup that does not switch at all.

Figure 2: National comparisons of shares responding “No, never” and “Yes, within the last year” to the question ““Have you or someone in your household changed service provider” for Internet services, EU28 countries, January 2014



Source: analysis of European Commission 2014, QB21.4

In the same survey, across the EU28 countries, 69% of non-switchers with bundled packages said they had never considered switching. This latter proportion casts doubt on another benign interpretation of the large proportion of non-switchers, namely that while they may not switch provider they may nevertheless benefit from improved offerings because suppliers must respond to the threat of switching. Where a large majority of non-switchers do not even consider switching, this threat does not appear strong. In essence, greater willingness of consumers to search and consider switching supplier should also boost the intensity of intra-operator switching (e.g. via retention offers). Conversely, if it

is possible to identify consumer groups with little willingness to consider switching, suppliers might have an incentive to make the service plans for such groups less attractive.

As the next section explores in greater detail, while economic theory, behavioural economics and previous econometric investigations offer some insights into why so many consumers are reluctant to switch, our understanding of the relevant forces remains partial. The present paper contributes evidence from Ireland. We use data from a 2015 survey conducted by the Irish regulator ComReg to construct econometric models of consumer switching intentions for three telecoms services: fixed line broadband, mobile telephony and landline telephony.

It is important to recognise upfront that, in common with many other analyses, our focus is on the intention to switch not switching behaviour. In principle, the two may diverge. Better evidence on the link between switching intentions and actual switching would be welcome, although we note that a large volume of work on the theory of planned behaviour (Ajzen, 1991) records strong positive correlations between intentions and actions across multiple domains (Armitage and Connor, 2001), which include consumer switching (Bansal and Taylor, 1999; 2002). While the correlation is imperfect, asking households to recall information and expectations from prior to a subsequent switching episode is also imperfect (Waddams Price and Zhu, 2016).

The detailed nature of the survey, which is specific to telecoms markets, allows us to incorporate information on consumers with bundles that include one or more of these services, to control for multiple aspects of device usage, and to separate the effects of unexpectedly higher bills (“bill shock”) from expected economic gains perceived as the result of the normal evolution of offerings in a competitive market. Thus, we aim to cast additional light on possible reasons for low switching.

Section 2 describes the previous international literature relevant to this study and outlines our contribution to it. Section 3 describes the methodology used for our empirical analysis and Section 4 describes the data employed. Results are set out in Section 5. We make some observations on implications for policy and future research in Section 6.

2. Background and previous research

Empirical studies of consumer behaviour have altered the economic analysis of switching in recent years. This section briefly reviews how the traditional micro-economic modelling approach to industrial organisation has been expanded to incorporate more complex models of consumer behaviour, providing the context for the present study.

2.1 Drivers of consumer activity

Following the traditional approach to industrial organisation, early work (surveyed by Klemperer, 1995) focused on the impact of incentives faced by suppliers in markets with non-negligible consumer switching costs. This research had an influence on the conduct of telecoms regulatory policy in liberalising jurisdictions. In parallel with *de jure* market opening, regulators introduced measures to reduce switching costs and remove barriers to entry. The aim was to make competition sufficiently effective that economic regulation (such as price controls) could be withdrawn. Partly through measures such as mobile number portability, following initial implementation difficulties (Buehler *et al.*, 2006; Sutherland, 2007) switching costs in telecoms markets were reduced and market outcomes such as switching rates and retail prices (Usero Sanchez and Asimakopoulos, 2012; Lyons, 2010) improved.

At least initially, the switching cost literature assumed that all consumers would carry out some level of search activity and make choices about whether to switch based on a comparison of prices and switching costs they encountered in the market. Over time,

however, empirical studies demonstrated marked differences among consumers in their willingness to search and switch, leading regulators to shift attention to consumer protection.

Prices and switching costs were never the only factors influencing consumer switching. In parallel with the supplier-focused economic literature on switching costs, marketing researchers studied the consumer experience of switching and highlighted a broader array of factors that favour or hinder consumer switching in telecoms and other sectors. The main group of factors highlighted by this literature concerns service failures and how they are handled by suppliers. For instance, Keaveney (1995) undertook an exploratory study using the Critical Incident Technique, which involves collecting and analysing detailed data on a large number of switching incidents. Keaveney proposed eight “service switching categories” that drive consumer switching behaviour, the most important drivers being “core service failures” (mistakes or technical problems of the service) and “failed service encounters” (poor service-consumer relations), followed by “pricing” (switching due to promotions, service charges, penalties, fees, etc).

More recent studies concur that whether telecoms consumers are willing to switch is influenced by more than prices and switching costs. Lopez *et al.* (2006) examine fixed line telephony data from Spain and find that customer relationships of longer duration, greater depth or wider breadth reduce the propensity to switch. In a study of North American mobile telephony subscribers Ranganathan *et al.* (2006) also emphasise how relational investments can reduce the likelihood of churn. They find that churn is related to whether the service is used mainly on weekdays or at weekends. The authors suggest that this difference mirrors the use to which mobile devices are put, with weekend-intensive users viewing them more as “fashion and status devices, rather than for work-related or functional purposes”. They also find that male users are more likely to switch provider

and older respondents less likely to do so. In a study of positive attitudes to switching in Sweden for landline telecoms, electricity and home insurance, Gamble *et al.* (2009) report that loyalty, perceived cost of information search and, in particular, expected economic benefits are the main drivers. These results are highly consistent across the three services. The significant role of search (as opposed to specifically switching) costs is in line with recent theoretical work by Wilson (2012), premised on the idea that search costs may be perceived with greater certainty.

Rather than attitudes or intentions, Waddams Price and Zhu (2016) exploit a survey designed to obtain data on actual switching (in the previous three years), together with key variables likely to influence switching in eight UK markets, which included mobile, broadband, fixed line rental, and fixed line calls. They record that expected gains from switching are significant, but find no role for expected search time, only time spent switching, while previous switching emerges as a strong predictor of switching. The analysis also notes that the estimated gain from switching required for a majority of consumers to switch is very high (c. £100 per month). Demographic factors are significant in their models; in particular, increasing income and age are found to have negative associations with search and switching. The authors note the difficulty that survey respondents had recalling the necessary information over a three-year reference period, leading to potential biases towards active consumers and responses likely to justify switching behaviour after the event. Estimated parameters also varied substantially across markets, underlining the importance of estimating models in each market separately, as we do here.

Overall, this literature suggests, first, that aspects of consumers' relationships with suppliers other than price play a role in switching and, second, that expected economic gains nevertheless matter. In this context, it is worth noting a potential confound when

trying to estimate the effect of consumers' expectations of better value available in the market. One of the main drivers of the increased numbers of complaints against telecoms providers in recent years has been so-called "bill shock" (Xavier, 2011), where bills greatly exceed expectations. Where studies collect information only on expected economic gains from switching, perceived gains could result either from a perception of improving value in the market, or from disillusionment with unexpectedly high bills received from a current supplier. The present paper simultaneously controls for bill shock when estimating the contribution of expected gains to switching intentions, thereby separating the incentive to obtain value in a dynamic competitive market from the desire to punish or avoid suppliers who turned out to be unexpectedly expensive.

2.2 Behavioural economic approaches

In parallel with the above studies, behavioural economic approaches have gone beyond empirical explorations of factors that affect consumers' propensity to switch, to examine psychological mechanisms and models that depart from the standard rational choice model of consumer behaviour (Rabin, 1998; DellaVigna, 2009). Multiple studies comparing individual usage of telecoms services with available tariffs have concluded not only that many consumers are on suboptimal tariffs, but that their choices depart systematically and substantially from optimality as a result of specific behavioural biases (Lambrecht and Skiera, 2006; Bar-Gill and Stone, 2009; Gerpott, 2009; Grubb, 2009). These studies mostly point the finger at distorted perceptions of service usage or failure to anticipate future usage.

Lunn (2013) argues that telecoms products are uniquely complex. Choosing a mobile or broadband product requires consumers to compare hardware, software, network and tariff structures simultaneously, where service usage is a constant temptation and rapid

technological change limits learning through repeat purchase. Such complexity may increase consumers' uncertainty when comparing products and prices. If so, then two other well documented behavioural phenomena may come into play. Firstly, switching suppliers may be affected by the endowment effect (Knetsch, 1989; Kahneman, Knetsch and Thaler, 1990), whereby individuals are disinclined to exchange something they already have for something they do not. This effect increases in strength with uncertainty over the value of the product in question (Horowitz and McConnell, 2002). Secondly, if consumers do not feel competent to assess product value, they may be disinclined to take the risk of making a mistake, consistent with Heath and Tversky's (1991; also Fox and Tversky, 1995) "competence hypothesis" and evidence on reluctance to make choices as they become increasingly complex (e.g. Iyengar and Kamenica, 2010). This fear may be well founded, since there is evidence that a substantial minority of consumers who switch to save money in the apparently more simple energy market actually manage to switch to more expensive products (Wilson and Waddams Price, 2010). To the extent that either the endowment effect or the competence hypothesis apply, consumers will need to perceive relatively large gains in order to be willing to swap their existing provider for another one.

Willingness to switch may also be affected by two other behavioural mechanisms. Empirical findings that an intention to switch often follows an experience of poor service are consistent with a preference for fairness that can override other considerations of price and quality (e.g. Thaler, 1998; Fehr and Schmidt, 1999). Lastly, and perhaps most obviously, consumers may simply fail to get around to switching through procrastination (O'Donoghue, and Rabin, 2001). Note that these explanations, unlike those above, do not necessarily imply a strong relationship between willingness to switch and accurate perceptions of gains from switching.

This approach to understanding consumer behaviour through behavioural economics has altered the economic analysis of industrial organisation. Recent models show that where suppliers perceive a systematic behavioural bias among consumers, they may compete to exploit it, resulting in stable yet inefficient market equilibrium outcomes (Gabaix and Laibson, 2006; Grubb, 2015), in which some consumers are disadvantaged. In this context, better empirical evidence on which behavioural phenomena drive unwillingness to switch is needed.

2.3 Bundling

Theoretical studies over many years have shown that bundling of goods or services is often pro-competitive, but also that it may have anti-competitive effects depending upon the market context (Kobayashi, 2005). There has been less research into how bundling affects consumer switching *per se*. Some recent empirical literature has focused specifically on whether service providers may facilitate or deter switching. In particular, service bundling may hinder switching by making it more difficult for consumers to compare services, while long-term contracts may prevent switching outright for the period of the contract (Xavier and Ypsilanti, 2008).

Prince and Greenstein (2014) find that bundling reduces consumer switching in triple play¹ telecoms services, but that this effect is only detectable at times when demand is “turbulent”, e.g. when demand for a service is declining. This implies that bundling may be used by suppliers that offer services in shrinking segments of the market to slow their decline. The authors also suggest that households who adopt bundled packages may differ from other households in various ways including perhaps their switching propensity.

¹ Bundled services including wired telephony, cable television and broadband Internet offered by cable operators.

Burnett (2014), using survey data from the UK telecoms market, finds that subscribers with bundled services are significantly less likely to switch supplier. Having been with a supplier for either a very short (< 6 months) or very long (>4 years) period are found to reduce the likelihood of switching. Among sociodemographic variables, only the oldest age group (>75 years old) is consistently less likely to switch than other age groups, middle income households are more likely than either higher or lower income groups, and having children in the household marginally reduces the switching probability. The latter finding is in keeping with the view that families with children may have less time to devote to search and switching activity, although the increasingly intensive and diverse use of telecommunications devices by children and young people may counteract this effect. The paper underlines the importance of controlling for supplier- or service-related variables as well as individual characteristics, since the former improve model fit and alter estimated coefficients.

2.4 Contribution of the present study

In the context of this previous literature, the present paper contributes in a number of ways. First, we add to what remains a relatively thin and somewhat contradictory literature on the determinants of switching, by examining a richer set of consumer and service characteristics associated with stronger or weaker switching intentions for a sample of telecoms service users in Ireland, casting light on some possible reasons for low switching. Second, we supplement previous examinations of the importance of expected gains from switching by controlling for bill shock, which is a potential confounding factor. Third, because the survey we exploit is recent and focuses on telecoms products only, we are able to control for detailed aspects of modern services, including bundling, whether consumers use a smart phone to access the internet, which provider they are presently

with, and multiple aspects of device usage. This last set of responses is important in the context of a market undergoing such rapid technological change.

3. Methodology

In the remainder of this paper we use ordered logit regression models to explain switching intentions: the self-reported likelihood of consumers switching telecoms service provider in the next year. In keeping with the previous evidence for market-specific effects, separate models are estimated for fixed line broadband, mobile telephony and landline telephony. Where survey respondents have bundles that include the relevant service, they are included in the regressions with a dummy variable indicating a bundled service.

Ordered logit models make efficient use of categorical data with a natural ordering (in this case, from ‘not at all likely’ to switch to ‘highly likely’). However, these models require a parallel lines (sometimes called proportional odds) assumption that can be rejected by the data. In essence, ordered logit assumes that each regressor has a uniform effect across the full range of the dependent variable. Since this is not necessarily so in practice, we also estimate partial proportional odds models to allow for varying effects from variables where the parallel lines assumption is rejected while preserving the assumption for other variables that do not depart from parallelism to a statistically significant extent. We employ Stata 14 for estimation; the `ologit` command is used for ordered logit models and `gologit2` for the partial proportional odds versions.

Based on theory and previous empirical studies cited above, we expect to see the following effects (see Table 1).

Table 1: Summary of expected effects on switching intentions

Having switched in the past	Positive
Having been with the supplier a long time	Negative
Bill shock	Positive
Being on a bundled package	Negative, especially for landline services (for which subscriptions are declining over time)
Expected gain from switching	Positive
Children in household	Negative
Older respondent	Negative
Household income	Positive, but maybe with peak at middle incomes

4. Data employed

ComReg commissioned RedC to do a consumer ICT survey in 2015; this is discussed in RedC (2015) and ComReg (2016). The survey yielded 1,039 observations of Irish consumers, each of whom answered affirmatively to the screening question “Can I check you are responsible or jointly responsible for the selection of telecommunications supplier and/or pay the telecommunications bills for your household?”. Descriptive statistics for the variables used in this paper are listed in Annex 1, Table 6 and Table 7.

4.1 Dependent variables

The dependent variables used in this study are derived from responses to a question asked about each individual or bundled service to which a survey respondent subscribes: “How likely are you to consider switching your service provider within the next 12 months?”. We focus on the answers relating to fixed broadband, landline telephony and mobile telephony services, and in each regression we include both respondents who subscribe to these services on a stand-alone basis and those who purchase them as part of bundles. The responses are categorical, with five categories expressing increasing intention to switch (Not at all likely, Not very likely, Neither likely/unlikely, Quite likely, Very likely), plus ‘Currently tied to contract and not able to switch’ and ‘Don’t know’. We exclude the

latter two groups from the sample, which allows us to treat the remaining five categories as ordinal.² Thus a positive coefficient or an odds ratio higher than one can be interpreted as showing a positive association between a regressor and the likelihood of considering switching in the coming year.

4.2 Variables used to test the main hypotheses

Past switching behaviour and tenure with current supplier. To capture possible interactions between these two consumer characteristics, we include a four-way categorical variable. Categories are ‘Past switcher, short time with supplier’ (used as the reference category), Past switcher, >3 years with supplier, Non-switcher, short time with supplier and Non-switcher, >3 years with supplier. The variable is constructed from the answers to two questions:

- “Have you previously purchased this service from other service provider(s)?” We classify respondents as switchers if they say ‘Yes’ to this question. Those who say ‘No’ or ‘Don’t Know/Can’t remember’ are classified as non-switchers. Past switchers of broadband, landline or bundled services are all taken to be switchers when assessing any of these services, whereas past switching of mobile services is evaluated separately because the switching processes for fixed line and mobile services may seem significantly different from the consumer’s point of view.
- How long do you have your [service or bundle] with [service provider]?

Non-bundled service subscription. We include a dummy variable in each regression that takes a value of 1 if the respondent has a stand-alone subscription to the relevant service

² While respondents who say they cannot switch because of a contract are excluded from the sample, other respondents may or may not be on contracts. This information is not available from the survey.

and zero otherwise (i.e. the service is part of a bundled package). Including this term allows us to test the hypothesis that bundling deters switching.

Expected savings if the respondent were to switch. This categorical variable is based on the following question, which is asked about each service to which a respondent subscribes: “What percentage saving on your current monthly bill for [service or bundle] do you think you could receive if you put in the time and effort to search for the best deal?”. To eliminate small cells the categories used here (0%, 1-10%, 11-20%, More than 20%, Don't know) were aggregated from a more detailed set of categories in the survey.

Bill shock indicator. This takes a value of 1 for those answering ‘Yes’ to “Thinking about your [service or bundle] have you ever received a bill or paid more for a service than you expected?” and 0 for those responding ‘No’.

4.3 Service characteristics

A specific set of characteristics is included depending upon which telecoms service is being examined (broadband, mobile telephony or landline telephony).

Fixed line broadband. A categorical variable identifying the supplier includes the following categories: Eir (reference); UPC; Vodafone at Home; Sky Broadband; and Others.

Questions are included on whether the respondent’s package includes TV service and, if the household watches TV, whether they mainly do so using cable or IPTV.

Responses to the question “Which of the following devices are connected to your broadband service and used within your home?” are used to provide a set of dummy variables. The items included are Desktop computer; Laptop computer; Smart Phone which is able to access the internet/data on your phone (iPhone, Android, Blackberry); Tablet computer (iPad); Gaming console (PlayStation, Xbox or Nintendo Wii); Mobile

gaming device (PSP, Nintendo DS); eReader (Kindle, Kobo); Smart TV (TV that connects to the internet); MP3/Digital music player; and Mobile internet device – iPod Touch/Netbook.

Mobile telephony. A categorical variable identifying the supplier includes the following categories: Vodafone (reference); O2/3; Meteor; and MVNOs and resellers.

A prepay contract dummy is assigned 1 for those respondents answering ‘prepay’ to “Thinking about your main personal mobile phone service provider, do you have a fixed term contract with a monthly bill, or do you have a prepay phone where you buy vouchers/top ups?”

A data warning dummy is assigned 1 for respondent answering ‘Yes’ to “Ever received a text message saying you are close to your data allowance?”.

Responses to the question “What do you personally use your mobile telephone for?” are used to provide a set of dummy variables. The items included are To make/receive calls domestically; To make calls to and from abroad; To make/receive traditional text messages, i.e. SMS; Browsing the Internet; Send/receive email; To use Social Media (e.g. Facebook, Twitter, Instagram, Pinterest); Instant Messaging on Facebook, WhatsApp, Viber or Snap Chat; Use mobile apps or shop online; Download/Stream Video or Music; and Use VoiP (e.g. Skype) services.

Landline telephony. A categorical variable identifying the supplier includes the following categories: Eir (reference), UPC, Vodafone at Home, Sky Talk and Others.

There is a dummy variable for ““Landline required for alarm monitoring system to work” and another for “While I have the landline it is not used at all”.

4.4 Sociodemographic variables

Categorical variables are included for the household income, age, employment status, housing tenure and marital status of the respondent.

Dummy variables (1/0) are included for the presence of children in the respondent's household and receipt of social welfare benefits.

5. Results

The following regression models aim to identify the main factors associated with strength of switching intentions by telecoms service. In each case, both the full model and a parsimonious model excluding collectively insignificant regressors are shown. For ease of interpretation, results are reported as odds ratios rather than coefficients on log odds, such that values significantly above 1 indicate a positive association with switching intentions while values below one indicate a negative relationship. To provide some intuition on how to read these statistics, an odds ratio of 2 implies that a factor is associated with a doubling in the odds of a one-step increase along the switching preference scale, whereas an odds ratio of 0.5 relates to a halving of the odds.

5.1 Broadband regression results

We start with fixed line broadband services, shown in Table 2 below. Respondents who have never switched before and have been with their suppliers for more than three years have significantly weaker switching intentions than past switchers who only recently started their supplier relationships. No other combination of switching history or tenure with supplier proved statistically significant, although the coefficients are suggestive of the expected pattern of effects.

Table 2: Broadband switching intentions models; ordered logit regression; dependent variable is "How likely are you to consider switching your service provider within the next 12 months?" From 1: Not at all likely to 5: Very likely

Variables	Full model		Parsimonious model ³	
	OR	SE	OR	SE
Non-bundle broadband user	0.614	0.157*	0.691	0.147*
Fixed line broadband bill shock	3.57	1.151***	3.327	1.011***
Past switcher, short time with supplier	REF		REF	
Past switcher, >3 years with supplier	0.603	0.170*	0.687	0.17
Non-switcher, short time with supplier	0.753	0.195	REF	
Non-switcher, >3 years with supplier	0.421	0.0976***	0.511	0.0926***
Saving expected = 0%	REF		REF	
Saving expected = 1-10%	2.37	0.750***	2.837	0.836***
Saving expected = 11-20%	1.524	0.502	1.63	0.501
Saving expected = >20%	2.5	1.010**	2.695	1.005***
Saving expected = Don't know	1.577	0.467	1.557	0.427
Children in household?	1.806	0.375***	1.71	0.317***
AGE: 18-24	0.626	0.302	REF	
AGE: 25-34	1.03	0.29	REF	
AGE: 35-44	REF		REF	
AGE: 45-54	1.206	0.307	REF	
AGE: 55-64	2.116	0.681**	2.092	0.496***
AGE: 65+	2.339	1.030*		
Working full time	REF		REF	
Working part time	0.89	0.238	REF	
Unemployed	1.255	0.486	REF	
Home duties	0.463	0.134***	0.491	0.129***
Full time student	2.135	1.028	REF	
Retired	0.43	0.162**	0.45	0.140**
Private rented accommodation	2.029	0.617**	1.959	0.492***
Council provided accommodation	1.017	0.391	REF	
Own home with mortgage	REF		REF	
Own home; no mortgage	1.14	0.274	REF	
In parents' home or Other	0.96	0.417	REF	
Social welfare recipient?	0.745	0.221		
Smart Phone able to access internet	1.66	0.365**	1.731	0.344***
Bundle includes TV service	0.989	0.363		
HH main TV uses cable or IPTV	0.674	0.231		
Marital status categories	N.S.			
Fixed broadband provider	N.S.			
Income categories	N.S.			
Other applications or devices used	N.S.			
Constant cut1	2.36	1.404	4.069	1.435***

³ Wald test of jointly restricting insignificant coefficients to zero: p=0.553

Variables	Full model		Parsimonious model ³	
	OR	SE	OR	SE
Constant cut2	7.054	4.233***	11.65	4.220***
Constant cut3	12.88	7.789***	20.82	7.695***
Constant cut4	33.91	20.95***	52.85	20.63***
Observations	660		660	

Notes: OR = odds ratio; SE = standard error; REF = reference category; N.S. = not statistically significant; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Respondents who subscribe to broadband outside a bundle are marginally less likely to report willingness to switch than those with a bundled package. This variable will be discussed in more detail later, when we relax the constraint that effects are constant across changes in the dependent variable categories.

Having previously experienced bill shock shows the expected positive, significant association with switching intentions. This effect size is large. Not surprisingly, households that expect no savings from switching were less likely to favour it. However, there is no clear pattern between the level of expected savings and strength of switching intentions.

For broadband services, households with children are significantly more likely to consider switching than those without them. Respondents who are over 55 share this positive association, but those who report being retired are significantly less likely to favour switching. This may hint at an interaction effect, with working people over 55 being more favourable to switching than their retired counterparts. Few other socioeconomic factors showed any statistical significance, although respondents working on home duties have a similarly negative coefficient to retirees.

Respondents in rented accommodation report greater willingness to switch broadband provider than the reference group with mortgages. Those with smartphones that are internet-capable also had somewhat stronger switching intentions. This may reflect easier

access to information and hence lower search and switching costs, or it could have to do with other unobserved characteristics of those who use smartphones (e.g. greater average intensity of ICT use?).

Other characteristics showed no significant associations with switching intentions, including income group, marital status, the identity of the fixed broadband service provider, whether the service bundle included TV service, and use of several other ICT applications or devices.

5.2 Mobile telephony regression results

The results for mobile telephony switching intentions show similarities with the broadband models (Table 3 below). Long-standing customers who have never switched before are again much less likely to switch than those with a shorter relationship and past switching experience. Bill shock is a significant positive factor, and working on home duties is a negative one.

Table 3: Mobile telephony switching intentions models; ordered logit regression; dependent variable is "How likely are you to consider switching your service provider within the next 12 months?" From 1: Not at all likely to 5: Very likely

Variables	Full model		Parsimonious model ⁴	
	OR	SE	OR	SE
Non-bundle mobile telephony user	1.666	0.79		
Mobile bill shock indicator	2.182	0.500***	1.847	0.384***
Past switcher, short time with supplier	REF		REF	
Past switcher, >3 years with supplier	0.668	0.163*	0.555	0.121***
Non-switcher, short time with supplier	1.508	0.459	REF	
Non-switcher, >3 years with supplier	0.379	0.0826***	0.306	0.0539***
Percentage saving expected = 0	REF		REF	
Percentage saving expected = 1-10%	0.786	0.296	REF	
Percentage saving expected = 11-20%	1.904	0.756	REF	
Percentage saving expected = More than 20%	6.994	3.081***	5.791	2.038***
Percentage saving expected = Don't know	1.376	0.422	REF	
Percentage saving expected = No response	1.734	1.642	REF	

⁴ Wald test of jointly restricting insignificant coefficients to zero: p=0.157

Variables	Full model		Parsimonious model ⁴	
	OR	SE	OR	SE
Children in household?	1.349	0.244*		
AGE: 18-24	2.607	1.022**		
AGE: 25-34	1.108	0.275		
AGE: 35-44	REF			
AGE: 45-54	1.078	0.254		
AGE: 55-64	1.015	0.307		
AGE: 65+	1.203	0.492		
Working full time	REF		REF	
Working part time	0.922	0.219	REF	
Unemployed	0.826	0.279	REF	
Home duties	0.536	0.139**	0.649	0.149*
Full time student	0.41	0.171**	0.889	0.283
Retired	0.592	0.199	REF	
Social welfare recipient?	0.554	0.136**	0.578	0.115***
Income <15,000	2.438	0.828***		
Income 15,000-25,000	REF			
Income 25,000-35,000	0.867	0.264		
Income 35,000-50,000	1.344	0.398		
Income 50,000-75,000	1.984	0.755*		
Income 75,000+	0.541	0.294		
Income No answer/refused	1.255	0.309		
Main mobile phone provider = VODAFONE	REF		REF	
Main mobile phone provider = O2/3	1.248	0.231	REF	
Main mobile phone provider = Meteor	0.521	0.124***	0.539	0.111***
Main mobile phone provider = MVNOs & resellers	0.5	0.150**	0.416	0.105***
Prepaid mobile	0.829	0.753		
Ever got text saying you were near data allowance?	0.776	0.135		
Make/receive traditional text messages i.e. SMS	2.369	0.506***	2.225	0.431***
Marital status categories	N.S.			
Housing tenure categories	N.S.			
Other applications or devices used	N.S.			
Constant cut1	3.284	3.001	1.293	0.297
Constant cut2	10.55	9.668**	3.912	0.914***
Constant cut3	20.96	19.26***	7.609	1.847***
Constant cut4	50.26	46.57***	17.9	4.824***
Observations	888		888	

Notes: OR = odds ratio; SE = standard error; REF = reference category; N.S. = not statistically significant; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

However, there are differences too. While expecting a large saving (>20%) has a very sizeable positive effect compared to expecting no savings, other levels of expected savings had low significance levels.

In this case we do not see significant associations with retirement or the highest age band, but instead find that being in receipt of social welfare is associated with weaker switching intentions. Being a customer of a newer network operator with a lower market share than the other two (Meteor) or a mobile virtual network operator is associated with weaker switching intentions. Finally, respondents who report that they make or receive SMS messages also report stronger intentions toward switching.

We find no significant association with prepaid vs. post-paid mobile contracts, housing tenure or use of a range of other mobile applications. There seems to be no robust association with income either.

5.3 Landline telephony regression results

The results of the landline regressions are shown in Table 4 4 below. Being a non-bundle subscriber is unimportant in this specification although, as in the broadband model, this picture changes when we allow the coefficient to vary by dependent variable category (discussed later). There is less, though some, evidence that bill shock has an effect for landline.

Table 4: Landline telephony switching intentions models; ordered logit regression; dependent variable is "How likely are you to consider switching your service provider within the next 12 months?" From 1: Not at all likely to 5: Very likely

Variables	Full model		Parsimonious model ⁵	
	OR	SE	OR	SE
Non-bundle landline user	1.003	0.271	0.99	0.25
Landline bill shock indicator	1.793	0.674	1.818	0.652*
Past switcher, short time with supplier	REF		REF	

⁵ Wald test of jointly restricting insignificant coefficients to zero: p=0.153

Variables	Full model		Parsimonious model ⁵	
	OR	SE	OR	SE
Past switcher, >3 years with supplier	0.594	0.169*	0.709	0.181
Non-switcher, short time with supplier	0.638	0.192	REF	
Non-switcher, >3 years with supplier	0.31	0.0780***	0.406	0.0813***
Percentage saving expected = 0	REF		REF	
Percentage saving expected = 1-10%	2.321	0.830**	2.718	0.937***
Percentage saving expected = 11-20%	1.654	0.61	1.739	0.615
Percentage saving expected = More than 20%	3.435	1.584***	4.031	1.760***
Percentage saving expected = Don't know	1.845	0.609*	1.796	0.567*
Children in household?	2.089	0.468***	1.63	0.325**
AGE: 18-24	0.571	0.388	REF	
AGE: 25-34	1.267	0.401	REF	
AGE: 35-44	REF		REF	
AGE: 45-54	1.541	0.429	REF	
AGE: 55-64	2.376	0.786***	1.804	0.421**
AGE: 65+	1.856	0.786	REF	
Working full time	REF		REF	
Working part time	0.68	0.198	REF	
Unemployed	1.559	0.696	REF	
Home duties	0.332	0.103***	0.372	0.103***
Full time student	2.546	1.741	REF	
Retired	0.386	0.135***	0.489	0.129***
Married	REF		REF	
Living as married/Co-habiting	1.18	0.533	REF	
Single	1.549	0.555	REF	
Widowed/divorced/separated	0.461	0.175**	0.471	0.170**
Private rented accommodation	1.988	0.744*	2.105	0.669**
Council provided accommodation	0.596	0.284	REF	
Own home with mortgage	REF		REF	
Own home; no mortgage	1.306	0.326	REF	
In parents' home or Other	0.493	0.238	REF	
Social welfare recipient?	0.671	0.225		
Landline required for alarm monitoring	2.171	0.706**	2.152	0.679**
Landline is not used at all	1.974	0.848		
Income band	N.S.			
Landline supplier	N.S.			
Constant cut1	1.636	0.886	2.126	0.730**
Constant cut2	5.312	2.910***	6.522	2.301***
Constant cut3	10.12	5.608***	12.07	4.360***
Constant cut4	25.7	14.63***	29.54	11.32***
Observations	575		575	

Notes: OR = odds ratio; SE = standard error; REF = reference category; N.S. = not statistically significant; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The pattern of associations with expected savings is similar to those for broadband services, with a higher estimated odds ratio for those who expect savings in excess of 20%. The effects for children in the household, working on home duties, being in the oldest age group and being retired are also similar to those for broadband. Respondents who are widowed, divorced or separated report a lower than average disposition towards switching landlines than the reference category (married). The modest number of respondents (46) who require a landline for alarm monitoring report a stronger than average intention to switch service provider.

5.4 Coefficients that vary across levels of the dependent variables

For most variables discussed in this section, diagnostic results were consistent with the “parallel lines” assumption that underlies the ordered logit estimator. In these cases it is reasonable to treat the coefficients as stable over the full range of ordered categories. However, a few variables showed significant variation over the categories when we re-estimated the regressions as partial proportional odds models. Their odds ratios are reported by category in Table 5.

Table 5: Odds ratios that vary significantly across categories in the parsimonious models, i.e. lines not parallel; *Italic* = not significant at 95% level; dependent variable is "How likely are you to consider switching your service provider within the next 12 months?" From 1: Not at all likely to 5: Very likely

		Category			
Model	Variable	1 vs. 2-5	1-2 vs. 3-5	1-3 vs. 4-5	1-4 vs. 5
Broadband	Non-bundle user	0.535	<i>1.07</i>	<i>1.57</i>	<i>1.45</i>
	Bill shock indicator	<i>1.49</i>	3.50	4.64	16.6
	Expected saving >20%	2.29	<i>1.87</i>	2.61	8.46
	Children in household	1.89	1.71	<i>1.450</i>	0.526
Mobile	Percentage saving >20%	2.92	5.06	8.59	8.59
	Social welfare recipient	0.454	<i>0.874</i>	<i>1.41</i>	2.06
Landline	Non-bundle user	<i>0.751</i>	1.80	2.12	2.71
	Bill shock indicator	<i>1.16</i>	2.10	2.89	10.50
	Expected saving >20%	3.47	2.84	3.91	15.60
	Expected saving not known	2.13	<i>1.12</i>	<i>1.17</i>	<i>1.52</i>
	Children in household	1.82	<i>1.31</i>	<i>1.23</i>	<i>0.482</i>

Bundling is associated with weaker switching intentions for landline users, and this effect is more pronounced for those who are more open to the idea of switching. In contrast, bundling is associated with stronger switching intentions for broadband users, but only at the lowest level of switching preference. This is a clearer statistical signal in both cases than the marginal significance found earlier in the logit models.

Bill shock still has a generally positive and significant association with switching preferences, but for mobile and landline services the effect size rises considerably as openness to switching increases. There are similar patterns for those expecting cost savings of greater than 20%; this is consistent with somewhat higher switching preferences for those not otherwise much inclined to switch, but a dramatically positive association for relatively keen switchers.

There are reversals in the direction of association along the spectrum of switching preferences for broadband users with children and for mobile users in receipt of social welfare.

6. Discussion and future research

An important consistency to emerge from the present analysis is that long-standing subscribers who have never switched before seem to be exceptionally resistant to considering switching in all three services we examined. Neither being a long-standing user nor having never switched is, on its own, a key factor; the combination of the two is what matters. As can be seen from the descriptive data supplied in Annex 1 (Table 6), roughly half of our sample fell into this group. The findings suggest that it may be increasingly hard to get this core group of non-switchers to participate in search and switching activities as time passes. From a policy perspective, this implication is a concern. As discussed in Section 2, multiple models in behavioural industrial organisation imply equilibrium outcomes in which groups identified by their decision-making can be disadvantaged relative to other groups (Grubb, 2015).

A contribution of the current paper is to unconfound, on the one hand, expected economic gains from switching, and on the other, bill shock. Our results show that bill shock is strongly associated with a preference for switching, dramatically so where respondents are already somewhat inclined in that direction. This is consistent with the emphasis placed on the consumer-supplier relationship in the marketing literature reviewed in Section 2 and with behavioural models that emphasise individuals' refusal to do business with providers they perceive to act unfairly. Given the strength of the effect we find, it would seem prudent to propose that future surveys designed to investigate switching try to include an indicator of bill shock and, perhaps, to explore other measures of the strength or otherwise of the consumer-supplier relationship. Nevertheless, controlling for bill shock,

we find expected savings from switching are also positively associated with switching intentions, especially when savings of more than 20% are expected and, again, especially when the respondent is already leaning towards switching. The fact that these associations are weakest for those with the lowest level of switching preference may help to explain the high estimates of the savings that would be required to prompt a majority to switch across multiple markets (Waddams Price and Zhou, 2016). The implication is that many people who perceive more modest gains, but gains nonetheless, are not willing to switch. This behaviour is consistent with the theories based on ownership and competence described in Subsection 2.2, though it does not distinguish between them. Future work is needed to tease apart the psychological mechanisms behind this stickiness, which reinforces the challenge of getting long-time non-switchers to engage. Even bill shocks and the availability of significant savings may not always be enough to move them, unless they are already somewhat inclined to switch.

We found mixed evidence regarding the effect of bundling on switching. Bundling seems to be associated with lower switching preferences for landline customers who are at least somewhat open to the idea of switching. This result is broadly consistent with the view expressed by Prince and Greenstein (2014) that it should be easier to detect a negative effect of bundling on switching in a market that is declining: alone among the services studied here, landline telephony is in decline. However, we also found some evidence of a positive association between bundling and switching intentions for broadband among users least likely to consider switching. This finding therefore contrasts with the strong, consistent effect reported by Burnett (2014). One possibility is that as bundling becomes more common, technology develops, and more suppliers offer a greater variety of bundles, an initial tendency to stick with suppliers offering apparently convenient bundles may give

way to more vigorous consumer activity. Since the bundling of telecoms products is increasingly common, this is an issue that future studies need to address further.

Various background characteristics were significantly associated with higher or lower levels of switching in the three markets, although not as strongly as bill shock and expected savings. What is perhaps striking is the inconsistency of these relationships across studies and separate telecoms markets. The exception was individuals working in home duties, who were consistently less likely to express a willingness to switch. We do not know much about how responsibility for switching decisions is shared within households. Relative to the 35-44 years base category, over-55s were more inclined to switch broadband and landline but not mobile supplier (although the effect was offset if they were retired); younger consumers had the opposite pattern. These results are somewhat different again from the U-shaped age profile of switchers across telecoms and non-telecoms markets recorded by Waddams Price and Zhu (2016). Broadband and landline households who are otherwise reluctant to switch appear to be more willing to consider switching when children are present. This contradicts the findings of Burnett (2014), although the coefficient in that paper was only marginally significant when service controls were included. It is consistent with the view outlined in Subsection 2.3 that greater intensity and diversity of usage within the household may prompt consumer activity. Other characteristics, including income, being in receipt of welfare, renting, being a student, and being a smartphone user are significant for one market but not others. The inconsistency of these effects, within our study and across studies, implies that willingness to switch is generally not a consistent characteristic of certain social groups, but is more complex and context specific. For instance, it is notable that over and above the greater inclination of young adults to switch mobile provider, switching is significantly less likely among the 25% of consumers who do not use SMS messaging, and that the associated effect size is

similarly substantial. Given such findings, one possibility for future research to explore is whether different individuals feel different levels of competence to make an active decision in different telecoms markets, perhaps depending on their familiarity and use of the technology. Another useful avenue would be to collect data on switching intentions and to return later to the same sample to learn if actual switching followed. One could then explore the links between switching intention and action in these markets.

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Annex 1 – Descriptive statistics

Table 6: Sample shares for variables common to all models

Variables	Broadband %	Mobile %	Landline %
Not at all likely to switch	59	65	60
Not very likely to switch	19	18	20
Neither likely/unlikely to switch	7.6	7	7.5
Quite likely to switch	7.4	5.3	6.8
Very likely to switch	6.4	4.8	6.1
Non-bundle user	21	96	20
Previously experienced bill shock	7.7	12	6.4
Past switcher, short time with supplier	25	19	24
Past switcher, >3 years with supplier	14	17	16
Non-switcher, short time with supplier	17	7.9	12
Non-switcher, >3 years with supplier	44	56	48
Saving expected = 0%	14	9.2	13
Saving expected = 1-10%	19	8	18
Saving expected = 11-20%	17	5.3	17
Saving expected = >20%	7.3	3.8	6.6
Saving expected = Don't know	42	21	45
Saving expected = No response		52	
Children in household?	58	54	53
AGE: 18-24	8.5	8.4	5.4
AGE: 25-34	18	19	14
AGE: 35-44	22	22	20
AGE: 45-54	22	20	22
AGE: 55-64	15	15	17
AGE: 65+	13	15	22
Working full time	46	44	42
Working part time	12	11	12
Unemployed	7.9	9.7	5.7
Home duties	13	14	15
Full time student	5.8	5.1	4
Retired	16	16	22
Married/civil partnership	66	60	70
Living as married/co-habiting	8.2	8.8	4.9
Single	20	22	16
Widowed/divorced/separated	6.4	8.8	9.6
Private rented accommodation	11	-8.7	7
Council provided accommodation	8	11	6.6
Own home with mortgage	37	33	35
Own home; no mortgage	34	33	42
In parents' home or Other	9.8	8.9	8.9
Social welfare recipient?	15	23	17
Income <€15000	6.1	10	7.1
Income €15,000 to <€25,000	14	18	13

Variables	Broadband %	Mobile %	Landline %
Income €25,000 to <€35,000	15	13	14
Income €35,000 to <€50,000	15	12	16
Income €50,000 to <€75,000	6.2	5.1	6.6
Income €75,000+	3.8	3.2	3.7
Income – no response	40	38	39

Table 7: Sample shares for variables specific to particular services

Variables	%
Broadband	
Bundle includes TV service	38
HH main TV uses cable or IPTV	34
Main broadband provider = Eir	33
Main broadband provider = UPC	33
Main broadband provider = Vodafone	20
Main broadband provider = Sky	10
Main broadband provider = Others	4.4
Desktop computer	26
Laptop computer	87
Smart Phone able to access the internet	70
Tablet computer	56
Gaming console	24
Mobile gaming device	8.6
eReader	13
Smart TV	18
MP3/Digital music player	7.9
Mobile internet device – iPod Touch/Netbook	13
Mobile	
Prepaid mobile user	53
Ever got text saying you were near data allowance?	33
Main mobile provider = Vodafone	42
Main mobile provider = O2/3	28
Main mobile provider = Meteor	19
Main mobile provider = MVNOs & resellers	11
To make/receive calls domestically	98
To make calls to and from abroad	37
To make/receive traditional text messages i.e. SMS	75
Browsing the internet	57
Send/receive email	49
To use social media	45
Instant Messaging	41

Variables	%
Use mobile apps or shop online	34
Download/stream video or music	14
Use VoIP services.	9.6
Landline required for alarm monitoring	8
Landline is not used at all	4.2
Main landline provider = Eir	44
Main landline provider = UPC	27
Main landline provider = Vodafone at Home	18
Main landline provider = Sky Talk & Others	11