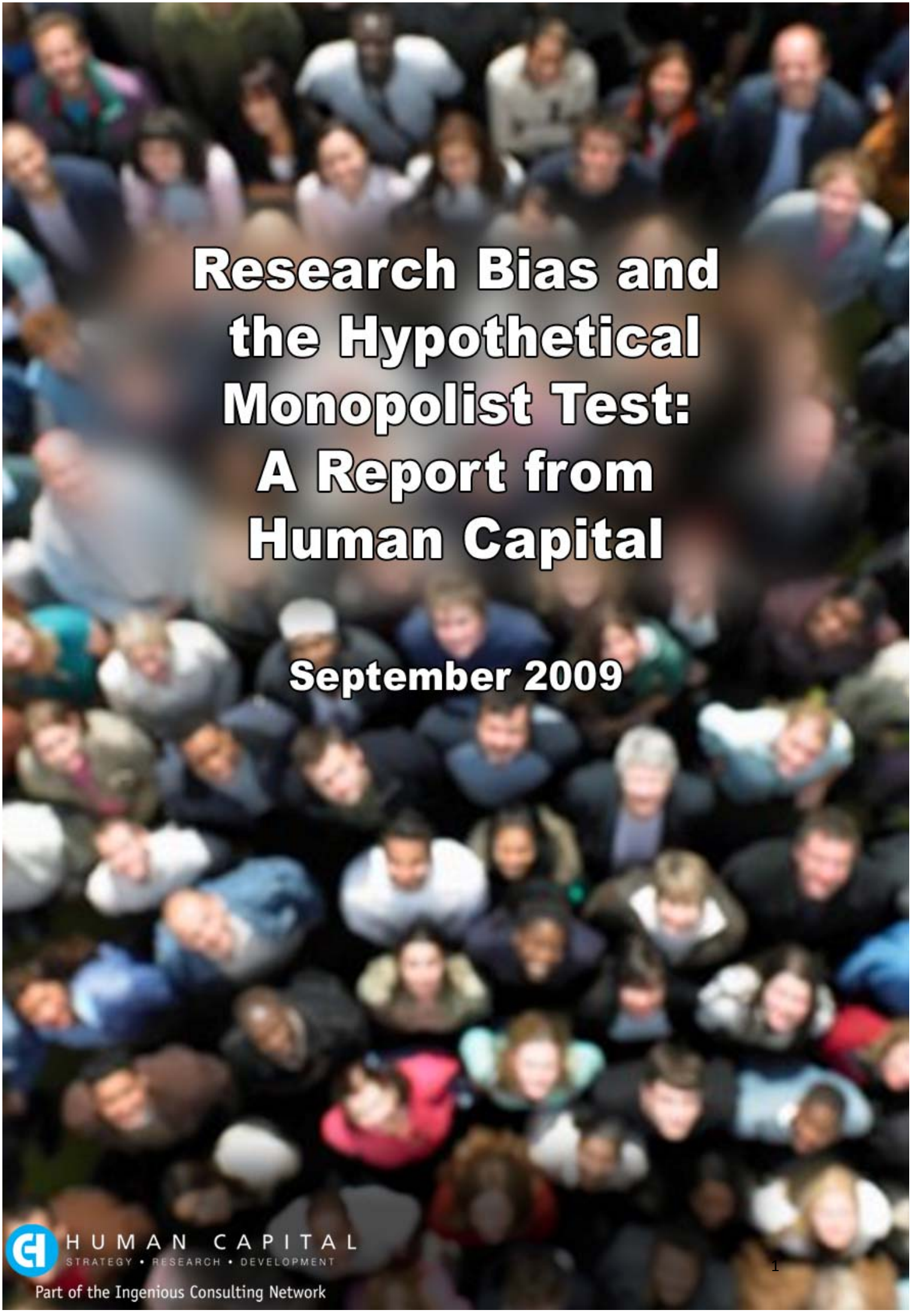


Research Bias and the Hypothetical Monopolist Test: A Report from Human Capital

September 2009

HUMAN CAPITAL
STRATEGY • RESEARCH • DEVELOPMENT
Part of the Ingenious Consulting Network

Contents

Executive Summary

Human Capital were commissioned by Sky to:

- Report on the use of consumer research when assessing the likely result of a Small but Significant and Non-transitory Increase in Price (SSNIP) in the context of a Hypothetical Monopolist Test (HMT)
- Consider in this context the likely impact of research bias, and identify best practice techniques to mitigate it
- Undertake primary research, based on best practice, to quantify consumer reaction to a SSNIP for various products in the UK TV market

We have used desk research (into both relevant academic literature and the past practice of competition authorities), interviews with relevant experts and our own expertise. The views expressed are those of Human Capital only.

The structure and key findings of the report are as follows.

Firstly, we describe the process of undertaking a SSNIP test and consider the role consumer research plays. We conclude that such research is widely recognised as an important source of evidence for SSNIP tests, as noted by the Competition Commission (CC), the Office of Fair Trading (OFT) and the European Commission, amongst others. Indeed, Commentary on the Horizontal Merger Guidelines (Federal Trade Commission and U.S. Department of Justice, 2006) notes that "customers are often the best source of information".

Furthermore, for a product such as Pay TV which is well understood by consumers and where purchasing decisions are tangible and easy to discuss, consumer research seems a particularly appropriate source of data for a SSNIP test.

Secondly, we consider the extent to which bias in consumer research might impact SSNIP test results. We review the academic literature on bias in consumer research and assess its historical treatment in market definition undertakings in the UK. We conclude that, while research bias is a recognised and genuine concern in some studies, its impact varies significantly and it can work bi-directionally. An assumption that research bias naturally results in an over-estimate of switching behaviour should be treated with considerable care.

A review of CC proceedings using customer research in all closed merger control cases under the 2002 Enterprise Act until the present day shows that perceived research bias has never been taken as a basis to exclude consumer research from market definition exercises. In only one CC case were concerns raised about a perceived overstatement of switching behaviour, and this resulted from poor survey and question design, and not because of intrinsic research bias resulting from the use of survey data.

Furthermore, we argue that Pay TV is particularly well suited for analysis via surveys, and so to suggest that research bias invalidates customer research for a Pay TV SSNIP test, by

extension, implies that the consumer research used in all the CC merger inquiries since 2002 is also invalid. This seems a bold claim.

Thirdly, we discuss the techniques that can be used to mitigate the impact of bias in consumer research. We note that a number of these have been demonstrated to be highly effective. For example, some types of ex post certainty question have been proven to mitigate research bias and represent an appropriate and conservative approach. Furthermore, although ex ante "cheap talk" scripts do not guarantee to eliminate research bias on their own, it seems appropriate that they are included as another mechanism to reduce the extent of any research bias.

Fourthly, we describe the approach taken in our own primary research in light of our investigation. Our approach builds on the current body of academic literature and adheres to best practice guidelines issued by the OFT, the CC and Market Research Society (MRS), amongst others.

Through the primary research the consumer reactions to five separate SSNIPs at 5% and 10% price increase levels were quantified in relation to three main products (packages including all Sky Sports channels, those including all Sky Movies channels and those including all Sky Sports and Sky Movies channels[1]). The survey was designed so that these multiple tests could be conducted within the single quantitative questionnaire, with the most conservative approach that was reasonable at each stage, even where this may have reduced respondents' propensity to "switch".

Fifthly, we discuss the results of the consumer research in detail and the outcomes of the five SSNIPs at two hypothetical price increase levels. We find that for *all the 5% and 10% SSNIPs* tested, there is widespread and significant switching behaviour.

[1] "Dual Sports" refers to packages containing all Sky Sports channels (but not Sky Movies channels) from any pay TV provider. "Dual Movies" refers to packages containing all Sky Movies channels (but not Sky Movies channels) from any pay TV provider. Packages including both Sky Sports and Sky Movies are referred to as "Top Tier" packages

Figure 1: Summary of SSNIP results[2]

Price change	Focal Product	Response: Continue current subscription	Response: Cancel Pay TV or move to a new provider outside the "focal product"	Response: Make changes to current subscription
5%	Dual Sports	82.2%	8.6%	9.3%
	Dual Movies	74.0%	8.4%	17.6%
	Top Tier	78.1%	8.6%	13.3%
	Dual Sports and Top Tier	77.7%	8.8%	13.4%
	Dual Movies and Top Tier	76.4%	8.7%	14.9%
10%	Dual Sports	55.0%	22.4%	22.6%
	Dual Movies	40.1%	23.7%	36.1%
	Top Tier	54.5%	19.4%	26.1%
	Dual Sports and Top Tier	54.1%	20.6%	25.3%
	Dual Movies and Top Tier	50.9%	20.7%	28.4%

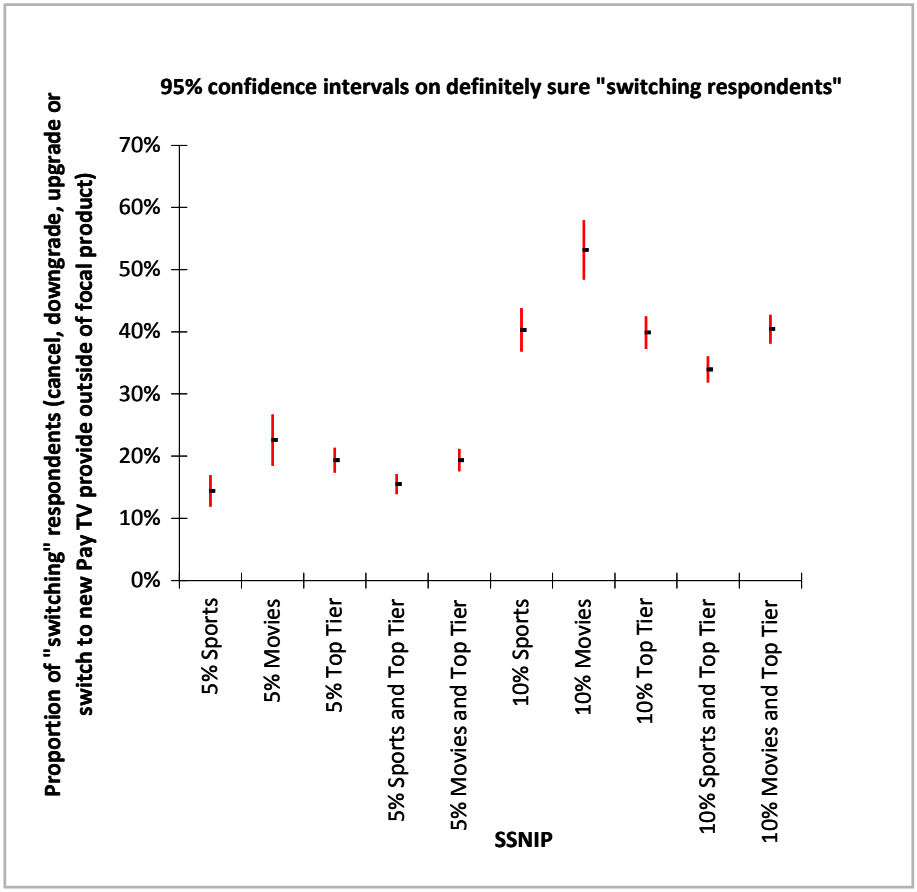
Of those respondents who made changes to their current subscription, the majority downgraded to a more basic package[3].

We also estimate the upper and lower confidence limits and illustrate that, even at a 95% confident level, switching behaviour is prevalent.

[2] Moving to a new provider outside the "focal product" refers to switching to platforms where the premium packages are not available. This includes BT Vision, Top Up TV and, for Sky Movies and Top Tier, Tiscali TV.

[3] For example, of the 36.1% of consumers who stated that would make changes to their current subscription as a result of a hypothetical 10% increase in price of all Dual Movies packages, 29.5% (82%) said they would downgrade to a basic entertainment or single premium channel package.

Figure 2: 95% confidence intervals on the proportion of "switching respondents"[4]



The switching results prevail despite employing a number of conservative and proven techniques to reduce overstatement of switching behaviour and mitigate research bias.

[4] "Switching" respondents refer to those consumers who would cancel Pay TV, upgrade or downgrade to a package which does not include the "focal product" or change provider to BT Vision, Top Up TV and, for Sky Movies and Top Tier, Tiscali TV

The Role of Customer Research in the Hypothetical Monopolist Test

Overview

An important consideration in competition cases is the definition of the "relevant market" for the products in question. The "relevant market" is the set of products and suppliers that impose a significant competitive constraint on individual firms. This constraint can be provided by consumers switching, or threatening to switch, to substitute products (demand-side substitution). Rival firms can also provide a constraint on pricing if they are able to rapidly switch from supplying one product to another in response to a change in relative prices (supply-side substitution).

The "relevant market" is the intersection of:

- A relevant product market, comprising all those products and/or services which are regarded as interchangeable or substitutable by the consumer by reason of the products' characteristics, their prices and their intended use;
- A relevant geographic market, comprising the area in which the firms concerned are involved in the supply of products or services and in which the conditions of competition are sufficiently homogeneous.

The Hypothetical Monopolist Test

The **S**mall but **S**ignificant and **N**on-transitory **I**ncrease in **P**rice (SSNIP) test is typically used to inform the definition of the relevant market in a consistent way. It typically forms the basis of the Hypothetical Monopolist Test (HMT).

In the EU the HMT or SSNIP test was used for the first time in the Nestlé/Perrier case in 1992 and has been officially recognised by the European Commission in its "Commission's Notice for the Definition of the Relevant Market" in 1997. The SSNIP test is[5]:

> *"now the world-wide standard for market definition".*

The Competition Commission Guidelines define the SSNIP test as follows[6]:

> *"In using the concept of the SSNIP test for product market definition, the Commission will consider whether a hypothetical monopolist of a certain product or set of products, which might constitute a market, could profitably impose a small but significant non-transitory increase in price (SSNIP). The principle behind the test is that a market is defined as a product, or collection of products, the supply of which can, hypothetically, be monopolised profitably.*

[5] Charles River Associates (1997)
[6] Market Investigation References: Competition Commission Guidelines (2003)

The application of the SSNIP test is an iterative process. It starts by considering each product (narrowly defined) in the market reference. The following question is then asked: if there were only one supplier of the product (a hypothetical monopolist), would it be able to sustain a SSNIP profitably? If the price rise is unprofitable, because consumers would switch their consumption to other products, then the closest substitutes are added to the product group and the procedure is repeated. Some analysis of the characteristics of the product including its intended use may, therefore, be necessary in order to establish possible substitutes that might be included in the group of products to be used in the SSNIP test. The relevant product market is normally defined as the smallest group of products for which a hypothetical monopolist could sustain a SSNIP profitably."

In essence, the SSNIP test seeks to identify the smallest relevant market within which a hypothetical monopolist or cartel could impose a profitable significant increase in price. In practice, this small but significant price increase is generally set at 5 or 10%.

The use of Customer Survey Research in the SSNIP Test

Customer surveys are widely recognised as an important source of evidence when undertaking an HMT or SSNIP test. The document "Merger Assessment Guidelines: A joint publication of the Competition Commission and the Office of Fair Trading"[7] states that a range of information, when available, can be useful in the analysis of demand-side substitution in market definitions. Relevant data sources include:

"responses from customers, competitors and interested and informed third parties to questions—sometimes posed in surveys—about customer behaviour and the hypothetical monopolist test."

The use of customer surveys in market definitions is also mentioned explicitly under EU and national market definition guidelines. For example, the European Commission Market Definition Notice states[8]:

"reasoned answers of customers and competitors as to what would happen if relative prices for the candidate products were to increase in the candidate geographical area by a small amount (for instance of 5% to 10%) are taken into account when they are sufficiently backed by factual evidence."

Survey evidence has therefore been used by regulators and authorities in a wide number of jurisdictions and in a diverse range of cases, including Pay TV. For example, the UK Office of

[7] Competition Commission and the Office of Fair Trading (2009)
[8] European Commission (1997)

Fair Trading (OFT) in its BSkyB decision[9] stated that survey evidence provided "strong evidence" on substitutability.

Customer survey research is found to carry significant value. In reviewing the merger of Distillers Corporation Ltd and Stellenbosch Farmers Winery Group Ltd[10], the South African Competition Tribunal stated:

> *"… consumers indicating their preferences based on their reserve prices constitutes the basis of how demand curves are constructed. Moreover, whilst maintaining the ceteris paribus condition, the methodology mimics consumer behaviour in a SSNIP test, thereby predicting substitutability. The [use of consumer research] itself is interesting in that it provides a manageable alternative for researching substitutability, one less involved than econometric modelling, and which, when prudently conducted, may be less prone to bias and other data related defects."*

Similarly, as noted by Coate M and Fischer J (2008):

> *"Although caution certainly needs to be used in interpreting "survey" evidence, the recent Commentary on the Horizontal Merger Guidelines (Federal Trade Commission and U.S. Department of Justice, 2006) notes that customers are often the best source of information and observes that the agencies routinely solicit information from customers regarding their product and supplier selections. Although not perfectly clear, this suggests that customers could provide more information than technical and economic details on switching costs, natural experiments, and other studies of the potential for switching suppliers."*

The suitability of consumer research as a data source for a SSNIP test will vary according to the specific nature and characteristics of the test and focal product. However, for a product such as Pay TV, which is well understood by consumers and where purchasing decisions are tangible and easy to discuss, consumer research seems a particularly appropriate source of data for the SSNIP. This is recognised by Case Associates[11], amongst others:

> *"For survey evidence to be useful, the consumers' potential reduction in the quantity consumed must also be quantified. For some products this is not a problem since the consumption decision is a binary one i.e. whether or not to buy a ticket; or to subscribe to a specific pay TV package."*

[9] UKCLR 240
[10] South African Legal Institute (2003)
[11] Case Associates (2003)

Research Bias in Customer Surveys

Types of bias

As discussed later in this report, research bias is not considered in the majority of research undertaken for commercial or regulatory purposes. However, it has been a longstanding and important concern among practitioners of stated preference methods (Mitchell and Carson 1989) and is widely discussed amongst academics. See, for example, Cummings and Taylor 1999, List 2001, List and Gallet 2001 and Little and Berrens 2004.

Umbrella terms such as "research bias" mask a wide and heterogeneous range of biases, the most significant of which are discussed in Figure 3 below.

Figure 3: Potential research bias effects in customer surveys

Type of bias	Description	Likely impact in this context
Strategic bias	• Respondents attempt to influence policy / pricing through their responses	• Respondents will seek to minimise prices if possible • Likely to result in **overstatement** of switching behaviour
Virtuous response bias, "yea saying", self enhancement, "warm glow"	• Consumers skew responses to the answers they believe are expected of them or portray them as "better" citizens	• Unlikely to be significant or relevant in this content
Hypothetical bias	• Respondents behave differently in situations where purchasing decisions are made in reference to "hypothetical" and not real money	• In questions referring to "hypothetical" rather than real money, respondents may be less sensitive to price increases • Likely to result in **understatement** of switching behaviour
Inertia bias	• Consumers over-estimate their propensity to switch as they do not take into account switching costs, inertia, etc.	• Likely to result in **overstatement** of switching behaviour
Presentational bias	• The survey design itself distorts responses (e.g. anchoring effects)	• Dependent on survey and question design • Could result in **either** over- or under- statement of switching behaviour
Uncertainty bias	• Respondents give misleading answers because they are simply uncertain of their response	• Could result in **either** over- or under- statement of switching behaviour

This range of bias effects is recognised throughout much of the academic literature and, as discussed later in this report, a number of well known techniques have been established for reducing their extent and impact.

The impact of research bias and the relevance to Pay TV

It is sometimes suggested that research bias leads to an *overstatement* of respondents' willingness to follow their stated behaviour. However, these intimations are typically made in reference to willingness to pay and contingent value studies. For example, in relation to contingent valuation research, primarily of public and environmental goods, Blomquist, Blumenschein and Johannesson (October 2008), found that:

> *"One limitation of contingent valuation, perhaps the most important, is that hypothetical responses tend to overestimate real responses. Meta-analyses by List and Gallet (2001), Little and Berrens (2004) and reviews by Harrison (2006) and Harrison and Rutström (2008) suggest that contingent valuation tends to produce hypothetical bias in the form of overestimation of actual (real) value."*

However, the relationship between the *type of good* and the *type of study* and the extent of research bias varies. For example, List and Gallet (2001) found that private good studies resulted in lower hypothetical bias than studies in which public goods were valued. Given this, it is important to recognise that a SSNIP test into switching behaviour in premium Pay TV packages is contextually very different to research into the contingent valuation of a public good. This is for two main reasons.

Firstly, Pay TV packages are actual products purchased by consumers. All respondents (purchase decision makers in subscribing households), would have been highly familiar with the products discussed. Pay TV packages are not hypothetical or abstract goods which are often the focus of contingent valuation type studies, where there is typically much lower familiarity and much greater respondent uncertainty.

Secondly, the direction of bias is likely to vary in the Pay TV context. "Hypothetical bias" is said to arise when valuation questions have no real monetary consequence (Whitehead and Cherry 2007). Because no money changes hands, responses may not be reflective of what people would do if they actually had to pay money based on their decisions[12]. However, if the essence of the bias is that respondents overvalue a service since they are not being asked to pay real money, then this is likely to *underestimate* switching, since respondents will be more willing to tolerate a price increase in notional rather than real money. In contrast, inertia and strategic bias will tend to result in an overestimate of switching behaviour, particularly if a survey was not constructed in line with best practice.

It is impossible to know the net effect of these various factors, and an assumption that research bias will naturally result in an over-estimate of switching behaviour could be misleading and should be treated with considerable care. Indeed, Farmer and Lipscomb (2008) illustrate how estimates can be biased downwards.

[12]Schulze et al. (1981) define this as "the potential error induced by not confronting the individual with an actual situation".

For the reasons described above, it is reasonable to assume that the extent of research bias in a SSNIP test relating to Pay TV products may be considerably lower than in contingent valuation and public good studies.

The treatment of research bias in undertaking a SSNIP test

To assess how customer research is typically used, and how perceived research bias is treated, when undertaking the HMT or SSNIP, we considered the use of surveys in Competition Commission merger control inquiries. We analysed the Competition Commission's use of surveys in all closed merger control cases under the 2002 Enterprise Act, until the present day (September 2009). This built on earlier work by Walters and Reynolds [13] who considered all closed cases prior to 2006.

We found that over this period, the Competition Commission completed a total of 60 merger inquiries, excluding cancelled references. Of these, 34 (57%) used a customer survey, the majority (88%) of which were commissioned by the Competition Commission. Evidently, customer surveys are a widespread and commonly accepted source of data used in undertaking a SSNIP test:

> *"Onerous data and econometric requirements in estimating demand-side substitution mean it is unusual for the CC to implement the hypothetical monopolist test directly in practice. For this reason, the CC often uses customer surveys to gauge customers' price-sensitivity and where possible implement the SSNIP test."*[14]

An overview of the cases reviewed is provided below.

[13] Walters C and Reynolds G (2007)
[14] Walters and Reynolds (2007)

Figure 4: Competition Commission use of research in merger control from 2002 to 2009

Merger Inquiry	Year	Research Engaged By	Respondents (Number)	Respondents (Type)	Survey (Type)	Research Methodology	Recognition of Research Bias?
Stena / P&O	2004	Competition Commission	400	Businesses	Qual + quant	CATI	No
Firstgroup / Scotrail	2004	Competition Commission	1,404	Consumers	Quant	CATI	No
Archant / Independent News & Media	2004	Competition Commission	579	Businesses	Qual + quant	CATI	No
National Express / Greater Anglia	2004	Competition Commission	1,212	Consumers	Quant	Self-completion	No
Emap / ABI	2005	Competition Commission	480	Businesses	Qual + quant	CATI	No
SDEL / Coors	2005	Competition Commission	501	Businesses	Quant	CATI	No
Napier Brown / James	2005	Competition Commission	218	Businesses	Quant	CATI	No
Budgett Francisco Partners / G International	2005	Competition Commission	316	Businesses	Quant	Self-completion	No, although due to a very low response rate the Competition Commission "regard(ed) evidence drawn from it as indicative rather than conclusive"
Somerfield / Mirrons	2005	Competition Commission	5,444	Consumers	Quant	Face-to-face	No
Bucher Industries / Johnston Sweepers	2005	Competition Commission	100	Businesses	Qual + quant	CATI	No
British Salt / New Cheshire Salt	2005	Competition Commission	516	Businesses	Quant	CATI	No
National Express / Thameslink	2005	Competition Commission	1,177	Consumers	Quant	Self-completion	No
HMV Group plc / Waterstone's plc / Ottakar's plc	2006	Competition Commission	2,801	Consumers	Quant	Face-to-face	No, although a merging party suggested that the choice of sample exaggerated consumer perception
CBS Private Capital Ltd / Hampden Agencies Ltd	2006	Competition Commission	803	Consumers	Quant	Telephone and self-completion	No
Macaw (Holdings) Ltd / Cott Beverages Ltd	2006	Merging party	unknown	Consumers	Quant	Unknown	No, although the Competition Commission gave little weight the to results because of misleading phrasing of the HMT question
Greater Western Passenger Rail Franchise	2006	Competition Commission	1,011	Consumers	Quant	Face-to-face	No, although the Competition Commission gave little weight to the results given other evidence available
Home Credit	2007	Merging party	556	Consumers	Quant	Interviews	Yes, although due to misleading phrasing of the HMT question rather than intrinsic research bias
Sportech plc / Vernons	2007	Competition Commission	1,100	Consumers	Quant	Face-to-face	No, although the Competition Commission gave little weight to the results because of a methodological problem created by the use of showcards
Woolworths Group plc / Bertram Group Ltd.	2007	Competition Commission	275	Businesses	Quant	Self-completion	No
Greif Inc / Blagden Packaging Group	2007	Competition Commission	106	Businesses	Quant	Self-completion	No
Thermo Electron Manufacturing Limited / GV Instruments Limited	2007	Competition Commission	80	Businesses	Quant	Self-completion	No
Stagecoach / Scottish Citylink	2007	Competition Commission	3,900	Consumers	Qual + quant	Face-to-face	No

Merger Inquiry	Year	Research Engaged By	Respondents (Number)	Respondents (Type)	Survey (Type)	Research Methodology	Recognition of Research Bias?
SvitzerWijsmuller A / S / Adsteam Marine Limited	2007	Competition Commission	34	Businesses	Quant	Self-completion	No
Classified Directory Advertising Services	2007	Competition Commission	1503 / 40	Businesses	Qual + quant	CATI	No
Hamsard 2786 Ltd / Academy Music Holdings Ltd	2007	Competition Commission	12	Businesses	Quant	Self-completion	No
Stericycle International LLC / Sterile Technologies Group Limited	2007	Competition Commission	27	Businesses	Quant	Unknown	No
GAME Group plc / Game Station Limited	2008	Competition Commission	608	Consumers	Quant	Unknown	No, although some concerns were raised on the choice of the sample and the wording of merging party surveys
Northern Irish Personal Banking	2008	Competition Commission	1500 / 1252	Consumers	Qual + quant	Unknown	No
BOC Limited / Ineos Chlor Limited	2009	Competition Commission	unknown	Businesses	Qual + quant	Self-completion	No
Domestic bulk liquefied petroleum gas	2009	Competition Commission	1,012	Businesses	Qual + quant	CATI	No
Nufarm / A H Marks	2009	Competition Commission	14	Businesses	Qual + quant	Self-completion	No
Project 'Kangaroo'	2009	Merging party	redacted	Consumers	Quant	Unknown	No, although the reseach was believed to overestimate switching behaviour because of the choice of price points, which were deemed to be in increments that were too large and did not reflect current or competitive prices
Capita / IBS	2009	Competition Commission	66	Businesses	Qual + quant	Self-completion	No
Holland & Barrett / Julian Graves	2009	Merging party	6,051	Consumers	Quant	Face-to-face	No, although the Competition Commission gave little weight to the results because of misleading phrasing of the HMT question

The weight placed on customer survey evidence varied by inquiry. In some, such as the Somerfield/Morrison (2005) and Stagecoach/Scottish Citylink (2007) inquiries, survey research was highly influential in reaching the market definition decision. In others, such as Macaw/Cott Beverages (2006), other forms of evidence were found to be more important.

In a small number of inquiries, concerns were raised about the integrity of the customer research. In all such cases the evidence had been provided by the merging party. In the majority of these cases, concerns related to sample misspecification or misleading question phrasing. In just once instance, Home Credit (2007), were concerns raised about a perceived overstatement of switching behaviour[15]:

> *"We note that the question that customers were asked was phrased in a way that made it difficult for customers to understand what was meant by '5 per cent more expensive' in the context of their own experience. The question itself was ambiguous and, moreover, the 5 per cent price rise was not clearly defined or articulated in cash terms that might have been more readily understandable to customers. Other questions in this survey do not provide any evidence about the interpretation that customers placed on this question. Given this lack of clarity, there may also be a risk of positive response bias. In light of these issues, it is difficult to place much weight on the elasticities calculated using this survey, which are likely to over-estimate the sensitivity of home credit customers to changes in price. Nonetheless, the responses may be interesting as an indicator of customers' relative feeling about price changes and the options available to them, rather than as an accurate prediction of how they would respond faced with a particular event"*

This was a result of poor survey and question design, not because of intrinsic research bias resulting from the use of customer surveys.

Our review of Competition Commission inquiries confirms that research must be designed in a methodologically correct manner to be useful, with care taken to avoid problems such as inappropriate sample selection and misleading question phrasing. Where this has been done, customer survey evidence can play a crucial role in market definition exercises. In the inquiries where surveys were found to have been designed and undertaken appropriately, research bias was *not* found to be a basis on which to disregard or reduce the importance placed on customer survey evidence.[16]

As noted by Case Associates previously, Pay TV is particularly well suited for analysis via surveys. This contrasts to the more variable consumer response to increases in prices in

[15] Para 4.49

[16] Indeed, Google searches for the six combinations of "hypothetical bias" or "stated preference bias" with "hypothetical monopolist test", "HMT" or "SSNIP" returns not a single substantial result, other than those from Ofcom's own website

other sectors covered by the CC's work. For instance, the CC relied on customer research in markets such as supermarkets, book sellers and rail transport, even though the effect of a price increase would be felt in more complex, subtle ways (such as variations in frequency and magnitude of purchase) rather than the relatively simple one-off purchase decision involved in pay TV.

Given this, any suggestion that research bias invalidates consumer research for a Pay TV SSNIP test by extension implies that consumer research used in all the merger inquiries listed above is also invalid. This seems a bold claim.

Dealing with Bias in Customer Research Studies

While the possibility of research bias is widely recognised, there are a broad range of techniques to combat it. Case Associates (2003) elucidate this point:

> *"There will always be concerns that stated preferences do not accurately reveal true preferences and the choices consumers will make in practice. It will be usual for such evidence to be challenged on the grounds of relevance, reliability and bias. The onus will therefore be squarely on those submitting such evidence to ensure that it is carefully undertaken, and subject to cross-checks to ensure its reliability and consistency. Here one can draw on techniques developed by economists and behavioural psychologists in cost-benefit analysis and experimental economics."*

Research has shown that some biases can be *completely avoided* through careful study design and implementation (Carson et al. 2001), with many other biases *significantly reduced*.

Given this, while research bias is a legitimate concern, it is, in itself, not a reason to disregard survey evidence. Rather, it creates a requirement to ensure that research is carried out in a methodologically rigorous manner, drawing on best practice in this area.

In addition to good design of the survey instrument, two of the most frequently used mitigation strategies are ex ante and ex post approaches. These are discussed in further detail below.

Ex ante approaches

Ex ante "cheap talk" approaches explicitly inform respondents that in similar hypothetical situations people tend to state they would follow a certain action more than they would in a real situation. Such approaches effectively aim to place respondents in a frame of mind similar to one in which a real expenditure takes place. The essential elements consist of an identification and definition of bias along with an exhortation to avoid it when stating likely behaviour.

Although cheap talk approaches have been found to be effective in some situations, on its own, overall effectiveness is varied.

Cummings and Taylor (1999) found that cheap talk worked well for some goods (in contingent valuation exercises), although Little and Berrens' (2004) meta analysis showed mixed success. Lusk (2003) found that cheap talk lowered bids for inexperienced consumers but not for experienced ones. Aadland and Caplan (2003), found evidence that people differ in their susceptibility to cheap talk, and Murphy et al. (2005) found that the effectiveness

varied based on price level, with it being effective at reducing hypothetical bias at high pricing levels.

Given this, while cheap talk scripts do not guarantee to eliminate research bias on their own, it seems appropriate that they are included as one mechanism to reduce the extent of any bias.

Ex post approaches

A common criticism of stated preference research is that it does not allow for uncertainty in responses. As noted by Moore, Bishop, Provencher and Champ (2009):

> *"…previous studies provide substantial empirical evidence that respondents can be, and frequently are, uncertain about their responses"*

As a result of this uncertainty, it is argued that some respondents provide answers which do not effectively proxy their actual behaviour.

An approach for dealing with respondent uncertainty is to use ex post certainty approaches. Such techniques ask respondents how certain or likely they would be to follow their stated behaviour. Typically only respondents who are "sufficiently certain" that they would pay a given amount or would follow a certain action are included in the analysis.

The premise of ex post approaches is that individuals who are more certain of their stated responses have a better match between stated intentions and real behaviour. Furthermore, research has suggested that individuals who are more certain of their stated responses give more internally valid responses. This result is found by Blumenschein et al. (2008) and Watson and Ryan (2007), amongst others.

Ex post certainty approaches generally fall into four main areas:

<u>Multiple-bounded discrete choice approach</u>

Although not strictly an ex post approach, it is possible to allow respondents to express uncertainty within their response. For example, if individuals are asked if they would change Pay TV provider following a price increase, they could be given options such as "Definitely No", "Probably No", "Not Sure", "Probably Yes", or "Definitely Yes".

The manner in which these multiple-bounded discrete choices are interpreted can vary. For example, Welsh and Poe (1998) recoded each of the possible answers as 1 or 0. Alternatively, Evans, Flores, and Boyle (2003) assigned probabilities to each of the responses.

"Probably sure / definitely sure"

An alternative ex post certainty approach is to ask respondents whether they are "probably sure" or "definitely sure" that they would follow their stated behaviour in a real situation. Typically only those responses that are "definitely sure" are then treated as responses that would, in reality, follow the stated course of action.[17]

In three studies using private goods, Blumenschein et al. (1998), Blumenschein et al. (2001) and Blumenschein et al. (2008) found that when only the "definitely sure" respondents were treated as following the stated actions, the null hypothesis of no difference between the corrected hypothetical treatment and the real treatment could not be rejected. In other words, if only responses that were "definitely sure" were considered, behaviour could be elicited without bias.

This approach also has the advantage that it avoids the need for calibration (although it arguably has the drawback that it commits to distinct categories, reducing flexibility).

In some situations it has been found that the "probably sure / definitely sure" approach can over account for the effects of hypothetical bias. Johannesson et al. (1998) found that where hypothetical bias was absent or limited from the start, considering only "definitely sure" responses meant that the adjusted propensity to follow an action was significantly below that which would occur in a real situation. In this sense, the "probably sure / definitely sure" technique is the most conservative ex-post approach in dealing with research bias.

Certainty scale

A third approach to ex post certainty questions is to ask respondents to indicate how certain they are of following their stated action using a 10-point scale (where ten is very certain and zero is not at all certain). Champ et al. (1997) and Champ and Bishop (2001) found that behaviour could then be estimated without bias if only responses with a certainty value greater than a critical value were considered.

The advantage of the quantitative scale is that it offers respondents a flexible way to indicate their certainty. This flexibility, however, comes at a cost in that the scale must be calibrated to the study.

Champ et al. (1997) and Blumenschein et al. (2001) found that including only those who selected 10 on their certainty scale as positive responses produced a result that was equivalent to actual behaviour. In contrast, Ethier et al. (2000) and Poe et al. (2002) found

[17] We note that in previous research in the Pay TV review, Ofcom used a modified version of the "probably sure / definitely sure" approach by assigning weights of 0.75 and 0.3 to definite and probable responses.

that a cut-off of 7, and Champ and Bishop (2001) and Norwood (2005) found that a cut-off of 8, was needed to produce equivalent results. Thus, the selection of a cut-off remains somewhat arbitrary.

A modified version of the certainty scale by Loomis and Ekstrand (1998) uses follow-up questions linked to probabilities[18], although this depends on respondent understanding of probabilities and percentages.

Statistical bias function

A fourth and less common approach to ex post certainty questions is suggested by Johannesson et al. (1999), who estimated a statistical bias function based on experiments for two goods.

Individuals were first offered the good hypothetically and then the same individuals were offered the good for real. The probability that a hypothetical action was followed by a real action was then estimated. The statistical bias function was then used to calibrate the remaining hypothetical responses.

Comparison between approaches

Ready et al. (2001), Samnaliev et al. (2006) and Shaik et al. (2007) found that different approaches had different impacts on adjusting for research bias. A number of studies have attempted to quantitatively compare these different mechanisms.

There is widespread support of the use of follow up certainty scales. For example, Morrison and Brown (2009) found that:

> *"Certainty scales, when properly calibrated … were found to be most effective in reducing the bias."*

Blomquist et al. (2008) tested different certainty scale approaches. They found that:

> *"For the hypothetical responses, the percentage "yes" tends to increase as we move from calibration by definitely sure to the statistical bias function and 8 or greater on the certainty scale to all "yeses"."*

The "probably sure / definitely sure" approach was found to be the most effective approach for calibrating willingness to pay to real behaviour:

[18] In this case, respondents are asked to express their responses in terms of percentage probabilities, from 0 to 100%.

> *"Using definitely sure to identify true "yes" responses produces a set of "yeses" that give no indication of hypothetical bias at any of the usual levels of statistical significance."*

It was also found to be the most conservative approach[19].

Given its support, it seems appropriate that ex post certainty techniques are used as a mechanism for reducing or eliminating bias distortion. Given its proven effectiveness at reducing bias, the "probably sure / definitely sure" approach is most suitable.

[19] At a price of $15 in one of the tests, the percentage of definitely sure "yes" responses amongst all responses was 35%. This is contrasted against equivalent "yes" responses of 55% and 58% for the statistical bias function and 10 point certainty scale respectively, and 71% for the unadjusted case where no ex post question was used.

Best Practice Study

Based on our investigation and our own experience, we have undertaken our own primary consumer research to form the basis of a series of SSNIP test. The research has been designed and undertaken to conform with best practice, adopting proven survey techniques to mitigate potential biases that might arise.

As noted, competition authorities have generally not considered issues of research bias in consumer research in support of SSNIP tests. Thus, as far as we are aware, the work we have undertaken represents the most rigorous and sophisticated treatment to date of bias in the context of SSNIP consumer research.

Our approach is discussed below under six headings:

- Broad principles adopted when undertaking the research
- Overview of the SSNIP test
- The research methodology
- Application of the SSNIP question
- Treatment of research bias
- Adhering to best practice

Broad principles adopted when undertaking the research

In designing and undertaking this research, we followed a number of broad principles. These include the following:

- Consulting the latest academic literature on survey design and adopting proven techniques for mitigating against the effects of research bias
- Taking the most conservative approach that was reasonable at each stage, even where this might reduce respondent's propensity to "switch"
- Ensuring the analysis is statistically rigorous by, for example, applying an appropriate weighting schema and testing all results at a 95% confidence level
- Adhering to stated research best practice, such as the Market Research Society Code of Conduct and guidelines issued by the Office of Fair Trading (OFT) and Competition Commission (CC), amongst others

Overview of the SSNIP test

A basic premise of the SSNIP test is that the analysis begins by considering the narrowest "focal product". If a hypothetical increase in price of this focal product is not found to be profitable for the hypothetical monopolist, the product definition broadens to include the

next closest substitute. In undertaking SSNIP tests an important initial question is therefore what the narrowest "focal product" is.

Given differences between other package components (such as differences in basic Pay TV offers from different providers), packages including *all Sky Sports channels on different providers* are not perfect substitutes. However, it is commonly accepted that products do not have to have the same characteristics to be included in the same relevant market. See, for example, the OFT's guidance on market definition which states[20]:

> *"Substitute products do not have to be identical to be included in the same market… Similarly, the products' prices do not have to be identical. For example, if two products perform the same purpose, but one is of a higher price and quality, they might be included in the same market."*

This was the approach taken by Ofcom in undertaking their SSNIP tests[21], where they considered as focal products: packages including premium sports channels; packages including premium movie channels; and packages of basic-tier TV channels when not retailed with premium channels.

We undertook SSNIPs for three main products:

- "Dual Sports" which refers to packages containing all Sky Sports channels (but not Sky Movies channels) from any pay TV provider;
- "Dual Movies" which refers to packages containing all Sky Movies channels (but not Sky Movies channels) from any pay TV provider; and
- "Top Tier" which refers to packages containing all Sky Sports and all Sky Movies channels from any pay TV provider.

We also undertook SSNIPs where the definition of the focal product was broadened by considering:

- Top Tier and Dual Sports packages (that is, any package that includes all Sky Sports channels); and
- Top Tier and Dual Movies packages (that is , any package that includes all Sky Movies channels).

These SSNIPs were undertaken in an iterative process (for example, respondents who stated that their response to an increase in the price of Dual Sporst would be to upgrade to Top Tier were then asked about a price increase of both products). In total, SSNIPs for 5 separate focal products were tested.

---

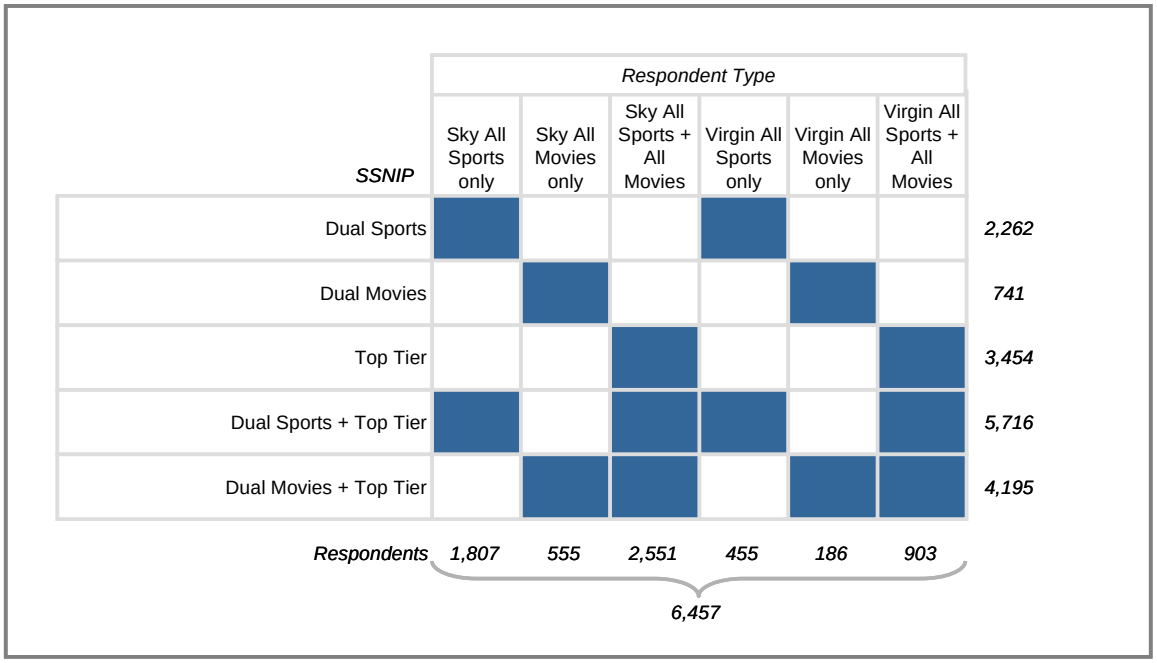
[20] Office of Fair Trading (2004), paragraph 3.5

[21] See Ofcom (2007) Market definition and market power in pay TV: Annex 13 to pay TV market investigation consultation

The survey was designed so that the multiple SSNIPs could be conducted within a single quantitative questionnaire. Individual respondents were incorporated in several of the SSNIPs, depending on their Pay TV provider and current premium subscription package.

Figure 5 below illustrates the relationship between the SSNIPs taken and the respondent type.

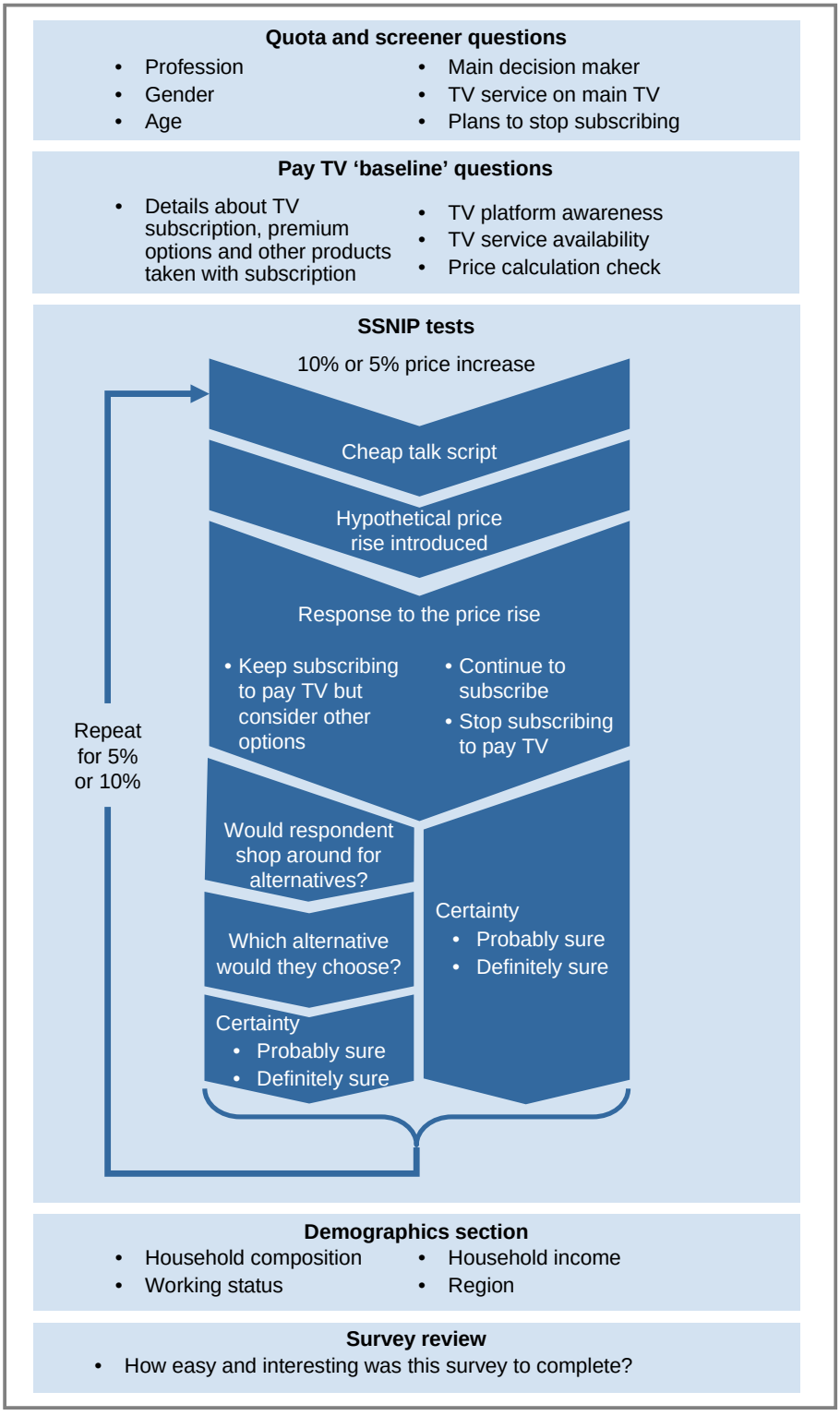
Figure 5: Illustration of SSNIP tests taken by type of respondent



While the need to conduct multiple SSNIP tests inevitably creates complexity, care was taken to ensure this complexity was "behind the scenes" from the perspective of the respondent. For instance, while a Sky customer taking all Sports and all Movies channels (Top Tier on Sky) would be a participant in three SSNIP tests, this would generally not require three separate questions. The first question to this respondent would ask them to respond to a price increase of Top Tier. If their reaction to this change was to stay with Top Tier on Sky (despite the price increase), then it was safe to assume that their response would not change if hypothetically prices of Dual Sports alone were to increase. Thus the respondent's first answer would also be their answer for all the other SSNIP tests relevant to them, and there was no need to ask them further questions (aside from varying the level of price increase).

Thus the path taken through the survey for the great majority of respondents was as follows:

Figure 6 : Survey overview



The research methodology

Overall approach

Primary consumer research was commissioned specifically for this report and undertaken by survey design and fieldwork agency KAE. The data was collected through an online quantitative survey, and was undertaken in August 2009.

The survey was designed so that multiple SSNIP tests could be conducted in a single questionnaire. Respondents were asked at least two questions about hypothetical price rises (one SSNIP test each at 5% and 10% price rises), although some respondents, based on their responses to previous questions, were asked more. To handle dynamic routing and response sets (for instance, different price levels dependent on the respondent's initial package) an automated approach was essential.

Consumers can respond to a price increase in a number of ways, including continuing to subscribe at the increased price; moving to an alternative provider; changing their package from their current provider or stopping subscription to Pay TV entirely. The survey reflected this diversity of options, but the associated complexity meant that a telephone or face-to-face based research approach was not feasible. An online approach was therefore adopted. This approach also had the benefit of ensuring data was collected in an accurate and consistent fashion.

The survey was designed to last, at most, 20 minutes. However, for the majority of respondents, the survey took considerably less time to complete and, on average, took just 10 minutes 9 seconds.

Sample quotas

A total of 6,457 respondents completed the quantitative questionnaire[22]. Minimum quotas were applied by provider (Sky / Virgin) and subscription package type (Dual Sports / Dual Movies / Top Tier). Minimum quotas were applied for two reasons:

- Firstly, to ensure that the sample sizes were sufficiently large for each SSNIP test.
- Secondly, to increase the degree to which the sample was representative of the target population, thereby reducing the magnitude of weighting required.

Treatment of Tiscali TV consumers

Packages containing Dual Sports channels (which includes Sky Sports 1, Sky Sports 2, Sky Sports 3 and Sky Sports Xtra) are available on a number of providers – Sky, Virgin and Tiscali TV.

[22] The sample was based on a consumer panel run by Research Now with a base of approximately 329,000 consumers (September 2009)

However, the number of subscribers to Dual Sports on Tiscali TV is extremely small[23]. The impact of Tiscali TV consumers on the overall switching results of Dual Sports subscribers will therefore be diminutive. Furthermore, given their low incidence, recruitment of these consumers is extremely difficult. Therefore Tiscali TV customers were excluded from the survey (though participants, who all started on Sky or Virgin, were given the option to switch *to* Tiscali as one possible response to price increases).

Note that Dual Movies is not available on Tiscali TV due to network capacity constraints (only the single Sky Movies 1 pack is available).

Treatment of non consumers

In the strict application of the SSNIP test, the behaviour of those who are not currently customers but who may become so is also relevant.

However, we note that the Competition Commission (CC), amongst others, do not typically consider non consuming respondents in their undertakings. As discussed by Walters and Reynolds (2007), the CC sees four advantages in defining the research population from only from the relevant parties' customers:

- Respondents are likely to be better informed about the issues that are relevant to the CC;
- Respondents are likely to be affected by the case;
- The CC can accurately assess whether the sample is representative; and
- The CC can accurately stratify the sample if necessary.

As such, in our research we restricted our sample to existing customers of Sky premium products on Virgin and Sky, and did not consider non customers.

Treatment of households and individuals

Pay TV subscriptions are sold on a household rather than individual basis. The subscription is therefore a household level decision, rather than an individual one. Individual respondents were therefore selected to represent households.

Only decision makers were asked to complete the questionnaire, with any respondents who were not purchase decision makers screened out of the survey at an early stage. Inclusion of respondents who were not household decision makers would have been likely to introduce bias meaning that the stated behaviour was not aligned with behaviour in real situations.

[23] Less than 0.1% of all Sky premium package subscribers access the content through Tiscali TV (source: Human Capital analysis)

Treatment of single pack subscribers

In undertaking the research, the sample was restricted to respondents who subscribed to all channels within a premium package. In other words, the sample comprised only of respondents who subscribed to:

- Dual Sports;
- Dual Movies; or
- Top Tier.

All respondents with a single Sports or Movies subscription (for example, only Sky Sports 1 and not Sky Sports 2, 3 or Xtra) were excluded from the sample. This approach was appropriate given the focus of the SSNIP tests on *all* channel products (for example, Dual Sports packages contain all Sky Sports channels). Furthermore, diminutive numbers of single pack subscribers made obtaining adequate sample sizes difficult to achieve.

Respondent exclusion

For a SSNIP test it is necessary to assess the *incremental* impact of the hypothetical increase in price. Therefore, respondents who would have stopped subscribing to Pay TV irrespective of the hypothetical increase should not be included in any switching calculation. Therefore we excluded respondents who said they were considering stopping subscribing to Sky / Virgin within the next 12 months.

Removing respondents who were *considering* stopping their Pay TV subscriptions reflects a conservative approach. Some of these respondents will ultimately decide to stay with their provider, but these might be the consumers most likely then to go if faced with a price increase.

Also, as is standard, respondents who worked in, or lived with household members who worked in a number of related industries were also excluded from the survey.[24] Such respondents would be more likely to give unrepresentative answers.

Application of the SSNIP test

Level of pricing increment

A SSNIP test seeks to estimate the impact on consumers' behaviour of a "small but significant" increase in price. Typically this is set at 5% - 10% of the focal product price.

[24] The industries excluded were advertising, market research, marketing, journalism, public relations, TV companies and telecoms

The Merger Assessment consultation issued by the Office of Fair Trading and Competition Commission[25] states that the level of the increment will vary depending on the particular circumstances of the test:

> *"For the SSNIP test, the Authorities will normally apply a price increase of 5 per cent whilst assuming that all other prices remain unchanged. However, in some markets a different price increase may be postulated. This could be above or below 5 per cent. The guiding principle in this regard is that the price increase applied should be one that is judged small but significant in the particular market under consideration and is assumed to last for a non-transitory period."*

For flexibility and prudence we considered **both** 5% and 10% increases in price of the focal product in our research, with **all** respondents asked about both price increases.

Choice of focal product with bundling

TV products are typically sold within a bundle or tied to other products. For example, content is bundled into channels, channels are bundled into retail packages and retail packages of TV channels are often bundled with other services including phone lines, broadband, set-top boxes, HD and multi-room.

This introduces significant complexity into the application of the SSNIP test.

The importance of basing the test on actual rather than notional products is recognised by Ofcom[26] (emphasis added):

> *"Our approach has been, as far as possible, to apply the HMT test to products that individuals actually consume, thereby avoiding attributing notional prices to individual components of bundles. In particular, for premium pay TV services (which are typically sold bundled with basic pay TV channels) we have taken the focal product to be any retail package which contains the relevant type of premium content."*

We believe this approach described by Ofcom is the appropriate one, and in our survey respondents were asked about the hypothetical price increase in reference to the manner in which products are actually sold. The starting "focal" product was therefore chosen to be the smallest product which *consumers could actually purchase*.

In reality it is not possible to buy individual components of bundles. Rather consumers can only buy bundles including the premium Sky Sports and Sky Movies products. Therefore, hypothetical price increases were calculated based on the cost of the total TV bundle,

[25] Competition Commission and Office of Fair Trading (2009), p25
[26] Ofcom (2007) Annex 13, para 3.14

including entertainment packs (but not including additional products such as HD, multiroom, etc.).

Calculation of the price increment

For the SSNIP tests, respondents were asked how they would respond to a hypothetical increase in the price of packages from all providers containing the premium content.

However, packages on alternative Pay TV providers are not perfect substitutes. The Sky basic packages, for example, which contain between 1 and 6 'Entertainment packs' are not equivalent to the M, L and XL packs sold by Virgin Media. Importantly, the monthly subscription prices of the packages vary.

To allow us to consider both Sky and Virgin Media consumers, the value of the increment needed to be consistent. As such, the same absolute price increment was applied to Sky and Virgin Media respondents with equivalent basic packages.

Value of the focal product

In the SSNIP test questions, respondents were asked about hypothetical price increases to their current monthly TV subscription costs. The price increases and the current monthly subscription cost were based on the prevailing market prices in August 2009.

Subscription costs related to the smallest "focal product" consumers could actually purchase. Additional services such as HD, multiroom, telephone line rental and broadband were excluded from this monthly cost, and respondents were explicitly told this.

Respondents were also told to consider prices:

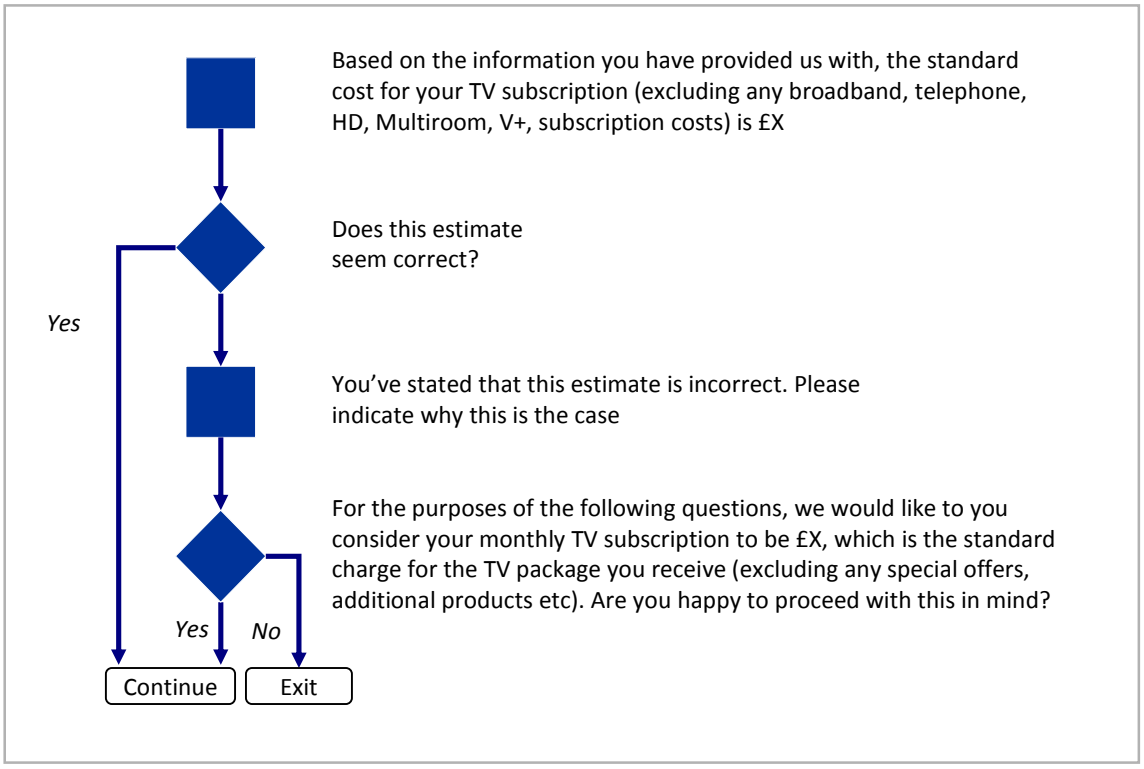
- That excluded any special offers such as introductory discounts; and
- Were over-and-above any standard annual price increases.

To ensure consistency and reduce hypothetical bias, respondents were told the current price of their TV package based on their answers to previous questions[27]. Respondents were asked to confirm this price. Those respondents who did not confirm were then asked why the estimate did not seem correct, and then requested to consider the standard cost when responding to hypothetical price increases. Any respondents who were not willing to

[27] In some markets, consumer ignorance of the current price paid can be a factor in HMT tests. However, we believe this is likely to be much less of an issue for Pay TV. Unlike a typical fast moving consumer good (FMCG), consumers buy Pay TV standalone (or at worst as part of a small bundle) rather than as part of a diverse and varying shopping basket; they receive a bill on a regular basis stating the price; and they buy the product from a single retailer, eliminating variations caused by buying a given brand from multiple retailers.

consider the standard cost were screened out of the survey[28]. This process ensured that all respondents asked about hypothetical price increases were aware of, and happy to consider, a consistent and standard cost for their monthly TV package. This is illustrated in Figure 7 below.

Figure 7: Illustration of price confirmation



Phrasing of the hypothetical price increase question

The introduction to the hypothetical price increase question was phrased as follows (with minor variations dependent on the respondent's starting package and the SSNIP test being run):

> *"Your provider increases the price of packages which contain all Sky Sports channels (but no Sky Movies channels) - such as your current subscription.*
>
> *As a result the standard charge for your package increases by **£A** per month. This means that the standard charge for your **package increases from £[X] to £[Y].**"*

Absolute figures were used to describe price increases rather than percentages, to aid respondent understanding[29]. Each respondent was asked about such a scenario at least twice, for a 5% and a 10% increase.

[28] 25 respondents were screened out as they were not prepared to accept the pricing provided

[29] The chairman of the UK's financial services regulator the Financial Services Authority suggested in a 2005 speech that one in five adults in Britain do not understand percentages. Although he was talking about percentage interest- and growth-rates for financial products, the point seems more general.

Respondents were then asked a three-step question to determine their response. Firstly:

> *In this situation, how would you respond to the price increase within the following 12 months? Please select one.*
>
> 1 *Continue to subscribe to my [Sky Sports] TV package at the increased price*
>
> 2 *Keep subscribing to Pay TV but consider changing my subscription. This would include things like:*
>
> - Subscribing to a different package on [Sky]
> - Moving to another Pay TV provider
>
> 3 *Stop subscribing to Pay TV*

At this stage respondents were deliberately not offered specific product alternatives. Presenting alternatives here would make it easy for respondents to select "switching options", which would not reflect the inertia effects which exist in real life, therefore overstating switching behaviour. Presenting an initial choice as to whether or not to consider changing subscription reflected a conservative approach that more accurately reflected the real world decision process.

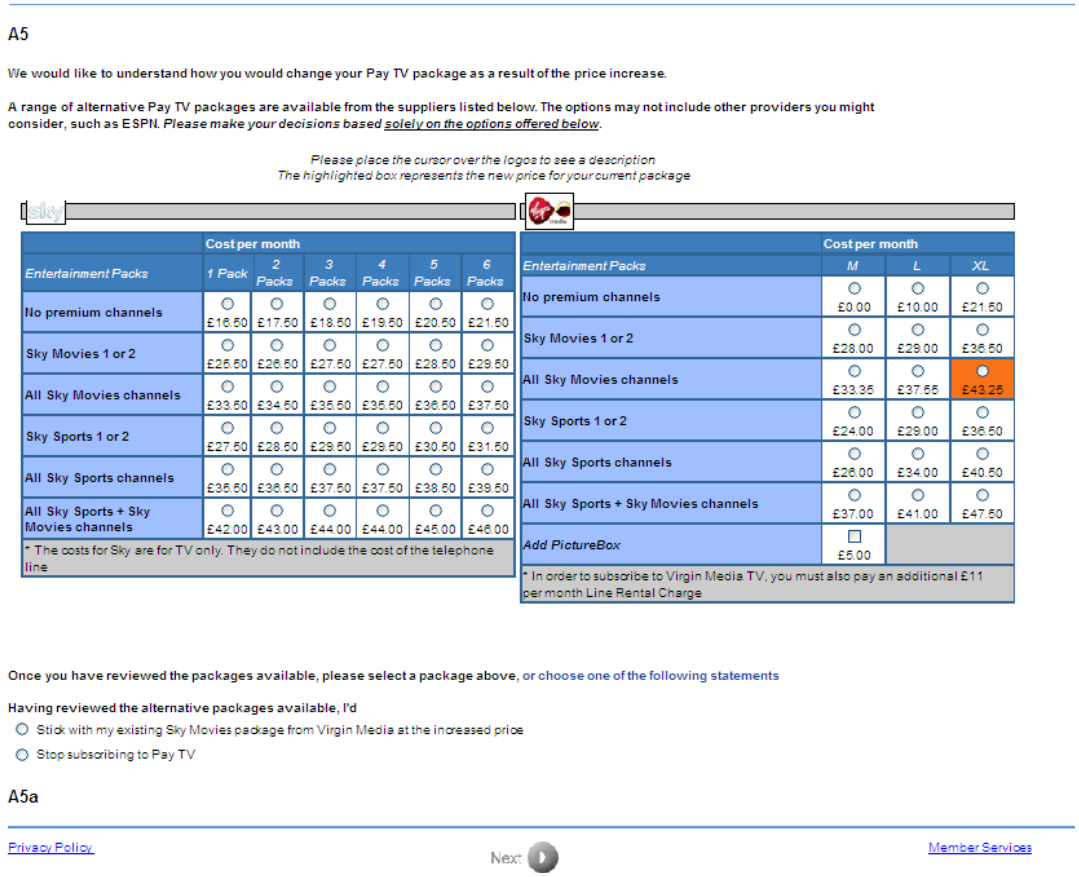
All respondents were then asked if they were "probably sure" or "definitely sure" of their choice.

Those respondents who stated they would consider switching were asked if they would consider changing their Pay TV provider. Again, this conservative approach was adopted to avoid offering respondents easy switching options that in practice they would have been unlikely to investigate.

For those respondents who would consider changing their subscription, the next question provided a choice of Pay TV packages, such as that shown in Figure 8 below (details were dependent on the respondent's previous answers).

The "switching" question is illustrated in Figure 8 below. In this example, the respondent was a Virgin Media customer subscribing to Dual Movies, but was either not aware of, or not able to subscribe to services provided by BT Vision, Tiscali TV or Top Up TV (as a result, these packages were not provided as switching options).

Figure 8: Illustration of "switching" question



A5

We would like to understand how you would change your Pay TV package as a result of the price increase.

A range of alternative Pay TV packages are available from the suppliers listed below. The options may not include other providers you might consider, such as ESPN. *Please make your decisions based solely on the options offered below.*

Please place the cursor over the logos to see a description
The highlighted box represents the new price for your current package

Entertainment Packs	Cost per month					
	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs
No premium channels	£16.50	£17.50	£18.50	£19.50	£20.50	£21.50
Sky Movies 1 or 2	£25.50	£26.50	£27.50	£27.50	£28.50	£29.50
All Sky Movies channels	£33.50	£34.50	£35.50	£35.50	£36.50	£37.50
Sky Sports 1 or 2	£27.50	£28.50	£29.50	£29.50	£30.50	£31.50
All Sky Sports channels	£35.50	£36.50	£37.50	£37.50	£38.50	£39.50
All Sky Sports + Sky Movies channels	£42.00	£43.00	£44.00	£44.00	£45.00	£46.00

* The costs for Sky are for TV only. They do not include the cost of the telephone line

Entertainment Packs	Cost per month		
	M	L	XL
No premium channels	£0.00	£10.00	£21.50
Sky Movies 1 or 2	£28.00	£29.00	£36.50
All Sky Movies channels	£33.35	£37.55	£43.25
Sky Sports 1 or 2	£24.00	£29.00	£36.50
All Sky Sports channels	£26.00	£34.00	£40.50
All Sky Sports + Sky Movies channels	£37.00	£41.00	£47.50
Add PictureBox	£5.00		

* In order to subscribe to Virgin Media TV, you must also pay an additional £11 per month Line Rental Charge

Once you have reviewed the packages available, please select a package above, or choose one of the following statements

Having reviewed the alternative packages available, I'd

- Stick with my existing Sky Movies package from Virgin Media at the increased price
- Stop subscribing to Pay TV

A5a

Privacy Policy Next Member Services

In designing this question, it was important to reflect the full set of choices available to respondents in a real situation, but balance this against the risk of respondent confusion. We also provided respondents with the opportunity to see additional information about alternative providers and packages if required.

To reduce the number of options (both to avoid offering switching options that the respondent would not take in real life and to make the question easier to complete), a number of techniques were employed.

Firstly, in addition to their existing provider, respondents were only offered packages from other providers, where they:

- Were aware of that provider;
- Reported that the provider was available in their area; and
- Explicitly stated that they would "shop around".

Secondly, options were combined where possible. For example, single premium channel options were aggregated (so, for example, respondents could choose "Sky Sports 1 *or* Sky Sports 2" single channel packages).

Thirdly, unlikely switching options were excluded. For example, respondents were not able to switch to the equivalent package from another provider since this was within the range of the "focal product". Furthermore the hypothetical monopolist would increase the price of that equivalent package, making such "horizontal" switching a highly unlikely consumer response.

Fourthly, niche premium add-on services such as MUTV and Disney Cinemagic were not provided as switching options. PictureBox was included given its comparability to premium movies channels such as Sky Movies.

Finally, ESPN was not included as a switching option. In reality, ESPN services are likely to be a constraint to packages containing Sky Sports channels. However, when the fieldwork was undertaken, Setanta Sports services were no longer available and ESPN had not launched in earnest. Removing ESPN as a possible constraint reflects a conservative approach, which is likely to underestimate switching behaviour (particularly given the relatively high level of reported switching to Setanta found by Ofcom in their HMT research[30]). Respondents' expectations were managed by being explicitly told their first choice might not be available.

We also employed a number of techniques to ensure the "switching" question was as easy to understand and complete as possible. For example:

- A clear intuitive layout was adopted;
- Additional information for each provider was provided in "hover over" boxes. This included details of the content and packages available through each provider; and
- The current price of the respondent's TV subscription was highlighted, as illustrated in Figure 8.

In the "switching" question, in addition to the option to choose a new package, respondents were also offered the choice of staying with their current package or leaving Pay TV entirely.

Treatment of research bias

In our approach we explicitly adopted a series of techniques to reduce the potential impact of different forms of research bias. These approaches are discussed below.

[30] Ofcom (2007), Annex 13, found that 9% of consumers would switch to Setanta following a hypothetical "10% price increase in the sports element of a Sky Sports bundle"

Reducing inertia bias and response overstatement

Ex ante "cheap talk" scripts have been demonstrated to reduce respondent overstatement and were used in the survey. Before questions about hypothetical price increases, the following script was displayed:

> *"In imagining such scenarios, people often respond differently to how they would in a real situation. Please bear this in mind when answering the questions below and try to respond as if it were* ***a real situation****."*

To increase the likelihood that the scripts were read and considered they were provided on a separate page prior to pricing response questions. A mandatory short pause was also applied to encourage respondents to read and digest this message.

As well as "cheap talk" scripts, ex post follow up certainty questions were employed. Following each hypothetical price increase question, respondents were asked whether they were "probably sure" or "definitely sure" that they would follow their stated behaviour in a real situation. In our subsequent analysis, only those respondents that were "definitely sure" were considered as consumers who would follow their stated action.

Alternate methodologies are feasible – for instance including all respondents, regardless of certainty, or (very conservatively) including uncertain respondents who would accept a price increase but excluding uncertain respondents who would change package / provider or stop subscribing to Pay TV. However, in practice, the switching behaviour is similar for each approach with a relatively large number of respondents leaving the "focal product".

This elimination of uncertain ("probably sure") respondents may understate the loss from downgrading to cheaper packages or switching to alternate providers. The question that elicits this decision (the table of different packages) is inherently complex, and may lead to greater uncertainty. However, a Virgin respondent (say) may be uncertain *which* Sky package he would switch to, but certain that he would leave Virgin. Excluding this respondent (as we do) will thus underestimate switching.

The survey was also structured so that respondents had in mind issues that might represent switching barriers. For instance, a consumer might need to transfer their broadband to a new provider as well as their TV, so respondents were asked about the full range of services they took from their Pay TV operator, not just audiovisual services[31].

[31] Although, as discussed previously, the hypothetical price increase related only to the TV component of the subscription

Reducing presentational bias and anchoring effects

A common problem with survey design is that it can introduce presentational bias and anchoring effects. These forms of bias typically occur when an individual's reported value or behaviour is correlated with a prior numerical or design cue.

Since its preliminary identification by Slovic and Lictenstein (1971) anchoring effects have been identified in numerous and diverse settings. A stark example of anchoring was found by Ariely et al. (2003) who asked subjects for the final two digits of their US social security number and found it to be closely correlated with individuals' subsequent valuations of a variety of unfamiliar goods.

Furthermore respondents can be influenced by the ordering of questions. For example, the Reference Guide on Survey Research[32] states that:

> *"In written surveys, respondents are more likely to select the first choice offered (a primacy effect), while in telephone surveys, respondents are more likely to choose the last choice offered (a recency effect)."*

To reduce the possibility of anchoring and presentation bias, a number of techniques were employed:

- Randomization of question responses was applied wherever practical throughout the survey
- Screening questions were drafted so as not to convey information that could influence the respondent's answers in the main survey
- All hypothetical price increase questions were asked in reference to the current market price of the respondents' subscription package (rather than, for example, an illustrative or indicative price), excluding additional services such as HD, broadband and telephony

Reducing strategic bias effects

Another source of research bias occurs where respondents believe they can influence policy or pricing through their responses. This is often known as "strategic bias" and can result in an over-statement of switching behaviour if respondents believe their response can reduce the likelihood of any price increases in reality.

To help mitigate the effects of "strategic bias", the ex ante cheap talk script informed respondents that:

[32] Diamond (2004)

> *"The purpose of the following question is not to help [your provider] decide whether or not to put up prices. Your answers will not affect the price of your subscription or any other subscription packages."*

As discussed, a forced delay was used on display of the "cheap talk" script to increase the likelihood that it was considered prior to the hypothetical price increase questions.

Reducing uncertainty bias

In situations where respondents are uncertain of their response, there is an increased likelihood that their stated behaviour will not match their behaviour in the real situation. This is typically known as uncertainty bias.

To reduce the impact of uncertainty bias, ex ante mitigation questions were asked following behavioural statements. These took the form of "probably sure / definitely sure" follow up certainty questions. This has been illustrated to be an effective and conservative approach for dealing with respondent uncertainty.

To further reduce the likelihood and impact of uncertainty, a number of additional techniques were employed. These included:

Screening of respondents

Respondents were screened to remove those who were likely to be unfamiliar with the Sky premium packages. For example, only those who were household decision makers *and* subscribed to Sky premium packages on either Sky or Virgin were asked to complete the questionnaire.

Filtering of switching options

Filtering was also used throughout the survey. This meant that respondents were only asked about providers of which they were aware. For example, respondents were asked if they were aware of Pay TV services offered by Top Up TV. If they were not, Top Up TV options were then excluded as switching options later in the survey. This prevented situations occurring where respondents were presented with providers of which they had no familiarity.

Filtering options in this way has been known to help in the mitigation of uncertainty bias. This technique also reflects a conservative approach. For example, the Reference Guide on Survey Research states that:

> *"In general … a survey that uses full filters tends to provide a conservative estimate of the number of respondents holding an opinion"*

Providing detailed product information

Although product switching options were restricted based on awareness and availability, it was possible that respondents could be presented with unfamiliar products. In these situations, to reduce the possibility of uncertainty, additional information was provided to increase respondent understanding.

For example, respondents who were aware and able to subscribe to Tiscali TV were provided with Tiscali TV switching options in the hypothetical price increase questions. If these respondents stated that they would consider changing provider, the Tiscali TV switching options were supplemented with additional product information:

> *"Two packs are currently available on Tiscali TV. Both packs include:*
>
> - *70 TV channels such as Sky1, FX, Sky Sports News and Paramount Comedy*
> - *350 on demand programmes and access to pay-per-view titles*
> - *8Mb/s broadband*
>
> *The TV, Broadband & Weekend Calls pack includes weekend UK and international calls*
>
> *The TV, Broadband & Anytime Calls pack includes UK and international calls at any time (to the top 10 countries only).*
>
> *The costs for Tiscali TV include 8Mb broadband, phone line rental and, at minimum, weekend UK & international calls."*

Equivalent descriptions were provided in a consistent format for all other providers (Sky, Virgin Media, BT Vision and Top Up TV).

Asking about actual behaviour

To help ensure surveys elicit more meaningful answers it is common to ask respondents to consider their *actual* purchasing decisions.

In the survey, prior to the hypothetical question, respondents were asked about their actual purchasing behaviour. For example, respondents were asked about how long they had subscribed to their main Pay TV provider and which additional products (HD, broadband, telephony services, etc.) they subscribed to.

Asking first about actual behaviour reminds respondents of relevant facts and experiences, so that responses in hypothetical questions are likely to be better informed. This approach is widely adopted. For example, the CC typically ask questions in stages: matters of fact, matters of behaviour, matters of choice and matters of attitude.

Reducing virtuous response bias

Given the context of this research, it seems unlikely that virtuous response bias or "yea saying" will have a significant distortionary impact on stated behaviour results. However, the use of the online methodology (rather than face-to-face or telephone based approaches to data collection) further reduces the likelihood of individuals responding in the manner which they believe is expected of them (for example, by the researcher), rather than that which they would follow in a real situation.

Adhering to best practice

Human Capital and KAE (the survey design and fieldwork agency who undertook the quantitative fieldwork) collectively have over 50 years of experience in undertaking quantitative research and adhere to the Market Research Society guidelines and Code of Conduct. Throughout the design, fieldwork and analysis we complied strictly with relevant research guidelines and 'best practice'.

For example, the Manual for Complex Litigation (Federal Judicial Center, 1995) lists seven criteria for deciding whether or not a survey "is trustworthy". We developed our approach to adhere to these criteria throughout, as illustrated in Table 1 below.

Table 1: Seven criteria for deciding if a survey is trustworthy according to the Manual for Complex Litigation

Criteria	Relevance of the approach adopted
The population was properly chosen and defined	• The population was based on current subscribers to packages containing all premium channels (Dual Sports, Dual Movies or Top Tier) on either Sky or Virgin Media • Non consumers were not included • Quotas were applied on package type and provider to ensure that the sample sizes were sufficiently large for each SSNIP test
The sample chosen was representative of the population	• Quotas were applied on package type and provider to increase the degree to which the sample was representative of the target population, thereby reducing the magnitude of weighting required • Weighting was based on a range of statistically significant variables so that the sample was representative of the relevant target population.

Criteria	Relevance of the approach adopted
The data gathered were accurately reported	• All analysis provided in this report is based on the actual fieldwork undertaken in August 2009 • An online methodology was employed, in part, to ensure data was collected in an accurate and consistent manner • Any adjustments made during the analysis, including the application of weighting, are discussed in detail in this report
The data were analysed in accordance with accepted statistical principles	• All data were analysed in accordance with both accepted statistical principles, and in line with best practice guidelines issued by the CC and the OFT • For example, significance testing was undertaken at the 95% confidence level. This is in line with the approach typically employed by Ofcom[33]: *"Significance testing at the 95% confidence level was carried out. This means that where findings are reported as 'significant', there is only a 5% or less probability that the difference between the samples is by chance, and is different from the main population. Where findings are reported as 'significant', this is to what we refer."*
The questions were clear and were not leading	• All questions were designed to mitigate potential bias effects, including presentation bias and anchoring effects (for example, by ensuring there was no implicit qualitative or quantitative cue) • Questions were designed with respondents in mind and were tested through a pilot of 360 respondents, undertaken before the full survey was launched. Following this pilot, the data was analysed, including an assessment of responses of how easy and interesting respondents found the survey

[33] Ofcom (2008) Annex 10, ch 1.11

Criteria	Relevance of the approach adopted
The survey was conducted by qualified persons following proper interview procedures	• The survey was designed, undertaken and analysed by Human Capital and KAE who collectively have over 50 years of experience in undertaking quantitative research and adhere to the Market Research Society Code of Conduct
The process was conducted so as to assure objectivity	• A number of techniques were employed to reduce research bias. In particular, techniques were adopted that would be likely to reduce overstatement of switching behaviour • A conservative approach was adopted throughout the design of the survey

Results

Summary of switching behaviour

The switching behaviour resulting from the SSNIP tests is provided in the table below. Note that:

- Moving to a new provider refers to instances where respondents switch to Pay TV Platforms where the "focal product" is not available. For example, for Dual Sports respondents this includes movements to BT Vision or Top Up TV where the Dual Sports package is not available. For Dual Movies and Top Tier, movement to a new provider includes switches to BT Vision, Top Up TV or Tiscali TV.
- Downgrading to a more basic subscription package includes cancelation of Sky premium packs, movements to single channel premium packages and, for Top Tier respondents, movements to either Dual Sports or Dual Movies.

Table 2: SSNIP results (based on "definitely sure" responses)

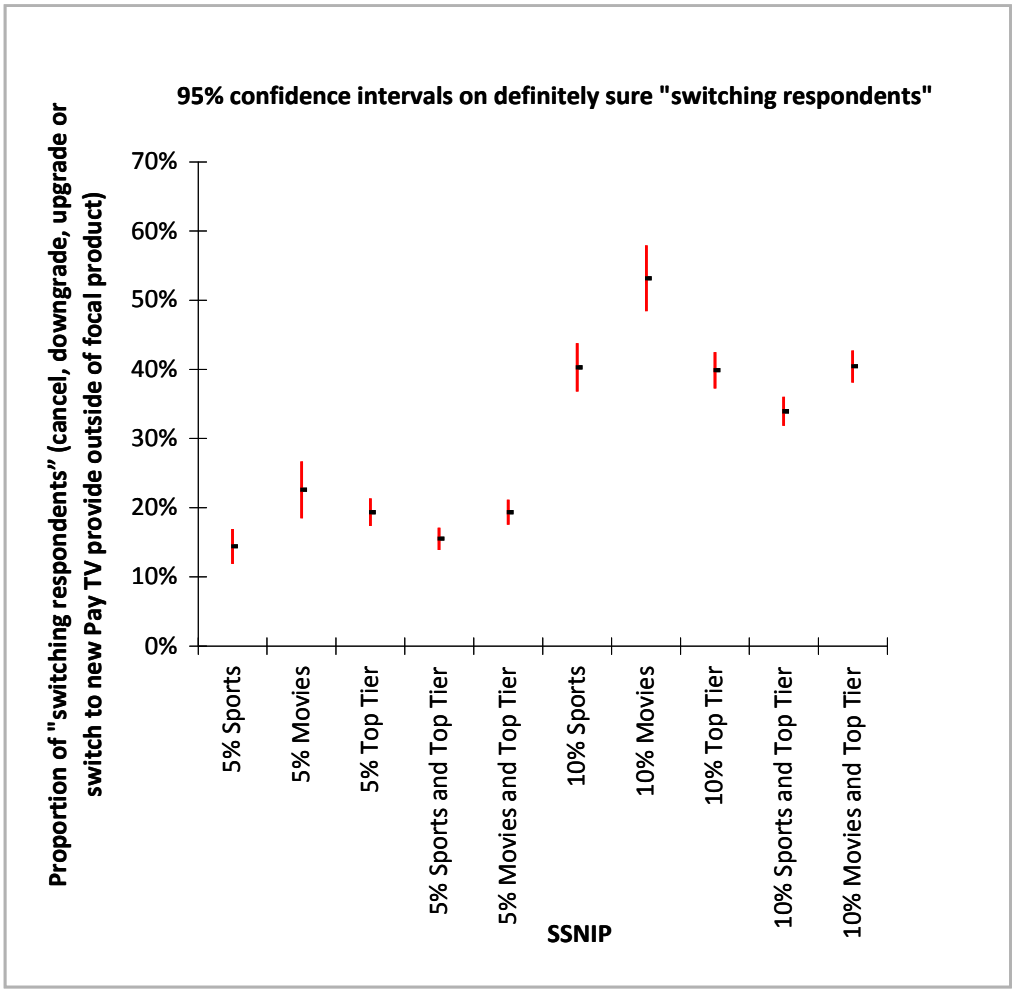
		Response				
Price change	Focal Product	Continue current subscription at higher price	Cancel Pay TV or move to a new provider	Retain existing subscription but make changes within "focal product"	Upgrade to Top Tier	Downgrade and cease subscription to "focal product"
5%	Dual Sports	82.2%	8.6%	3.4%	0.4%	5.5%
	Dual Movies	74.0%	8.4%	3.4%	0.0%	14.2%
	Top Tier	78.1%	8.6%	2.5%	n/a	10.8%
	Dual Sports and Top Tier	77.7%	8.8%	6.7%	n/a	6.7%
	Dual Movies and Top Tier	76.4%	8.7%	4.2%	n/a	10.6%
10%	Dual Sports	55.0%	22.4%	4.7%	1.3%	16.6%
	Dual Movies	40.1%	23.7%	6.7%	0.0%	29.5%
	Top Tier	54.5%	19.4%	5.6%	n/a	20.5%
	Dual Sports and Top Tier	54.1%	20.6%	12.0%	n/a	13.4%
	Dual Movies and Top Tier	50.9%	20.7%	8.7%	n/a	19.7%

For example, following a hypothetical 5% increase in the price of Dual Sports, 8.6% of consumers would cancel Pay TV or move to Tiscali TV, Top Up TV or BT Vision.

Confidence limits

In addition to estimating the switching behaviour for each SSNIP, we calculated the standard error for each of the switching options. This allowed us to estimated upper and lower 95% confidence limits. The confidence limits illustrate that, at a 95% level, switching behaviour remains prevalent.

Figure 9: Upper and lower 95% confidence limits on respondents who "switch" away from the focal product



"Switching respondents" here refer to those consumers who would cancel Pay TV, upgrade or downgrade to a package which does not include the "focal product" or change provider to BT Vision, Top Up TV and, for Dual Movies and Top Tier, Tiscali TV.

Figure 10: Upper and lower 95% confidence limits on respondents who continue to subscribe to the same package

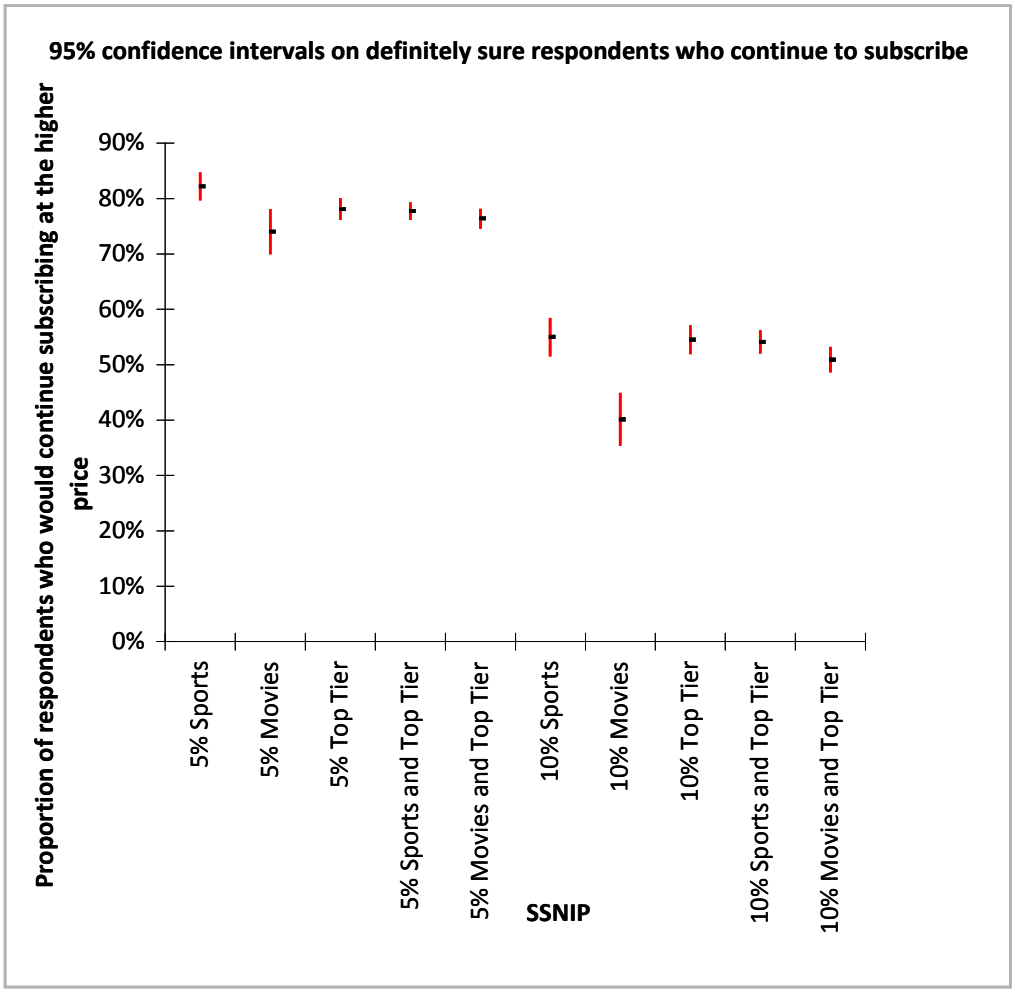


Figure 11: Upper and lower 95% confidence limits on respondents who cancel or move provider

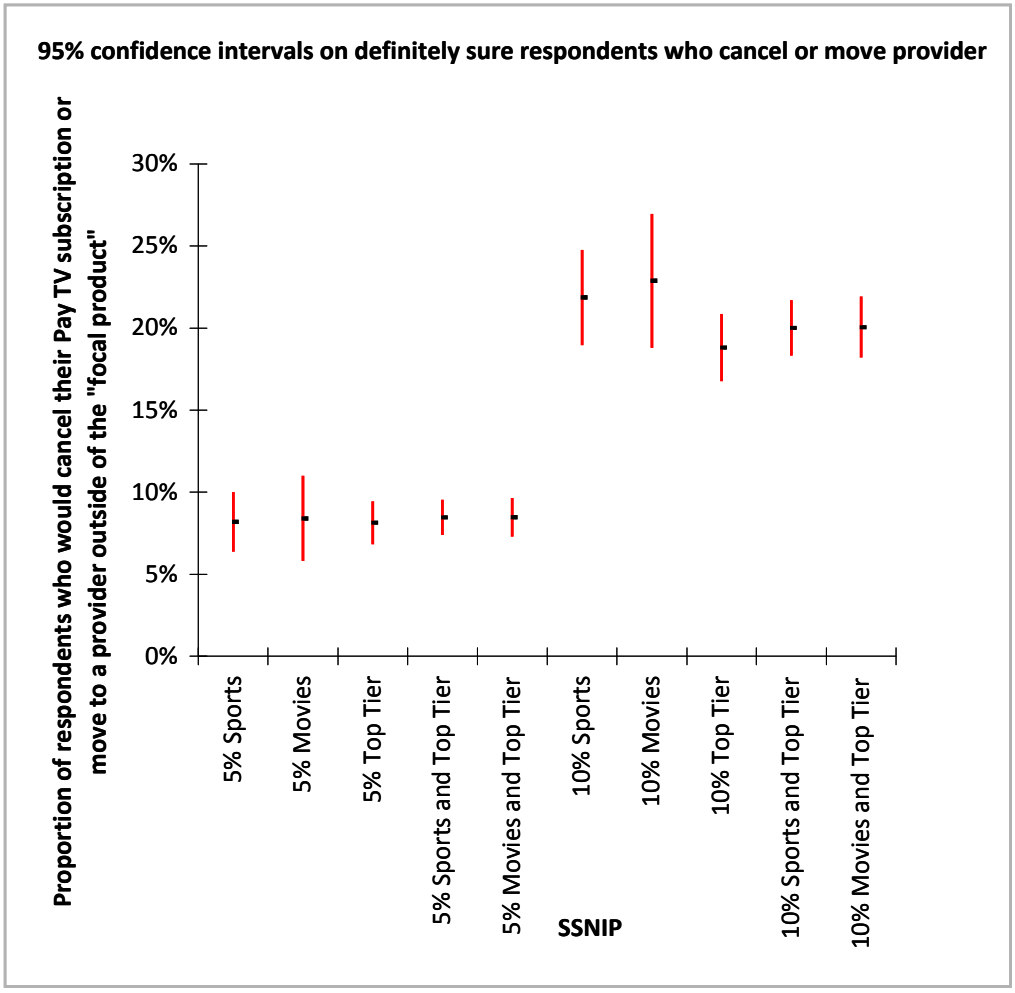
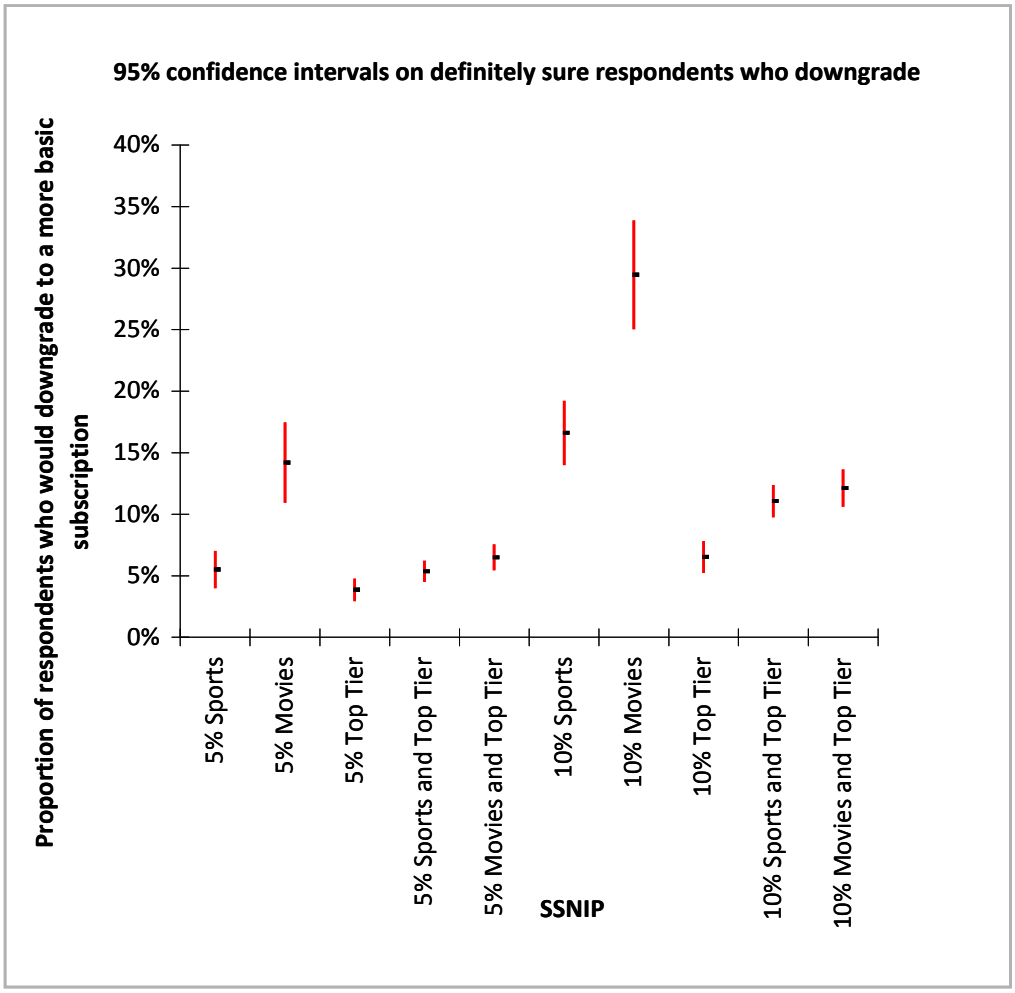


Figure 12: Upper and lower 95% confidence limits on respondents who downgrade to a more basic package (for example by moving to basic entertainment packs or single premium channels only)



Weighting and Analysis

Sample sizes

Five separate SSNIP tests were conducted within the single questionnaire at two price increase levels, with respondents incorporated into several of the tests dependent on their Pay TV provider and current premium subscription package. The sample size for each of the SSNIP tests is illustrated in Figure 13 below.

Figure 13: Unweighted sample size by SSNIP test

Effective sample size by SSNIP Type

SSNIP Test	Sample Size
Dual Sports	2,262
Dual Movies	741
Top Tier	3,454
Dual Sports and Top Tier	5,716
Dual Movies and top Tier	4,195

Identifying weighting variables

Statistical and research best practice suggests that sample data should be weighted to the appropriate universe of consumers, removing the effects of any under or over-sampling.

A total of 6,457 respondents completed the questionnaire. Although this was a large sample[34], naturally reducing the likelihood of under or over sampling, we felt it was important to ensure that the dataset was representative of the population. A weighting schema was therefore applied.

Minimum quotas were set to ensure that the sample sizes were sufficiently large for each SSNIP test and to increase the degree to which the sample was representative of the target population (reducing the strain on the weighting schema). Minimum quotas were applied by provider (Sky / Virgin) and subscription package type (Dual Sports / Dual Movies / Top Tier). No quotas were applied to demographic variables.

In weighting the demographic variables, we adopted a systemic approach rather than arbitrarily selecting variables to weight. This was achieved by assessing which variables had an impact on the survey results by subjecting each to a statistical test. Chi-square tests were used to test the null hypothesis that the distribution of observed responses would be the same as the distribution of expected responses.

[34] We note that the aggregate sample size was larger than any survey undertaken by the Competition Commission in the 60 merger inquiries we analysed

The observed responses were calculated by determining the distribution of results for each demographic split across a broad range of variables. The expected result for each demographic split was calculated by scaling the overall distribution to the sample size of each split. The chi-square analysis then assessed differences between the observed and expected results, and determined whether these differences were statistically significant at the 95% confidence level.

The chi-square tests were conducted at both the 5% and 10% price increase levels.

Deriving the weighting scheme

A rim weighting methodology (also known as iterative proportional fitting) was applied to the following variables: Pay TV provider and package, age and gender of the household decision maker, presence of children, working status and Socioeconomic Group (SEG). This rim weighting process applies a series of weights to each respondent in an iterative manner, until the overall sample demographic profile matches that of the target population.

Six target populations were considered: subscribing households to Dual Sports, Dual Movies and Top Tier, on both Sky and Virgin Media. The target demographic data for each population was obtained from analysis of subscriber demographic profiles provided by Sky and BARB panel member data.

Each of the weighted variables, as well as TV provider and premium package, was input into a statistical software package[35] and the weight for each respondent was calculated. The weights were then applied to the unweighted sample.

Data analysis

The set of 6,457 survey results was used to provide answers to 10 different SSNIP tests – 5 tests each at the 5% and 10% price increase. Each SSNIP test had specific sample requirements.

As a result, when undertaking each SSNIP test, the appropriate respondent set first had to be identified from the aggregated weighted sample. The set was selected based on respondents' current TV provider and their current premium package subscription.

For each of the SSNIP tests, the responses to the hypothetical increase in price were analysed in detail.

[35] SNAP Survey 9

For example, Figure 14 provides detailed information of how consumers responded to a hypothetical 5% increase in the price of Dual Movies before any adjustments were made for "probably sure" respondents. In this case, 67.8% of respondents stated they would stay with their existing package following a 5% increase in the price of all Sky Movies packages, whereas 16.9% of respondents stated that they would change their pay TV subscription by downgrading or changing their base entertainment package.

Figure 14: Respondent reactions to a hypothetical 5% increase in price of Dual Movies packages[36]

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.6%	0.4%	0.4%	0.3%	0.3%	2.5%	
Sky Movies 1 or 2	0.5%	0.7%	1.0%	1.2%	1.1%	3.9%	
Dual Movies	0.7%	0.9%	0.3%	1.7%	0.3%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Top Tier	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
							16.9%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.0%	0.1%	1.8%	0.0%	0.0%	0.2%	
Sky Movies 1 or 2	0.0%	0.1%	0.8%	0.0%	0.0%	0.0%	
Dual Movies	0.2%	1.4%	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Top Tier	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
							4.8%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	Weekend Calls	Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.1%	0.1%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.0%	0.0%	0.0%	0.0%	
					0.2%

BT, Basic TV Options, Bronze	0.0%
BT, Basic TV Options, Silver	0.0%
BT, Basic TV Options, Gold	0.4%
Top Up TV, TV favourites	0.1%
Top Up TV, PictureBox	0.1%
Top Up TV, TV favourites + PictureBox	0.1%
Stay with current package	67.8%
Cancel Pay TV Subscription	9.6%
Total	**100.0%**

As can be seen, respondents are reacting to the price increase of Dual Movies packages by downgrading to single movies packages or reducing the level of their base entertainment packs (aside from those staying with their current package or cancelling entirely). This is a reassuringly intuitive result.

Detailed switching analysis (prior to the "definitely sure" adjustment) is also provided for Dual Sports, Dual Movies and Top Tier in Appendix 2: Detailed switching analysis.

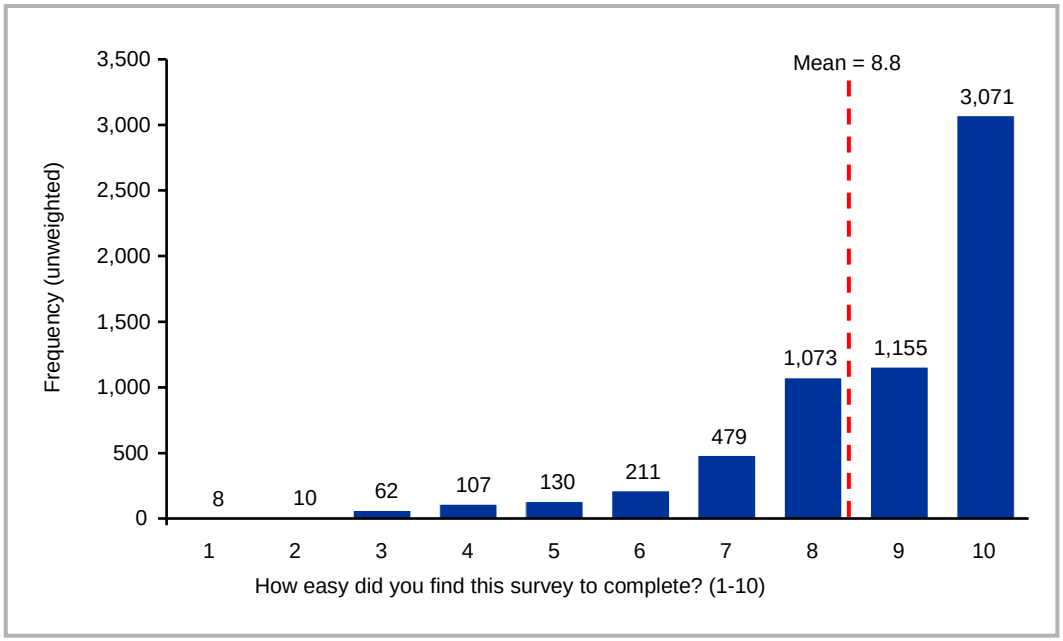
[36] Weighted data, all respondents

Respondent feedback

The Market Research Society guidelines frequently mention the importance of designing a questionnaire that it is straightforward to complete for respondents. Although our survey tested a large number of SSNIP tests, the complexity this required was hidden from respondents as far as possible.

To assess how complicated the survey was from the perspective of respondents, they were asked how easy they found it to complete on a scale of 1 to 10, where 1 was very difficult and 10 was very easy. Over 80% of respondents gave a score of 8 or above, while almost half of respondents gave a score of 10. The mean (unweighted) score was 8.8, suggesting that respondents found the survey extremely easy to complete.

Figure 15: Distribution of respondents based on stated ease of completion



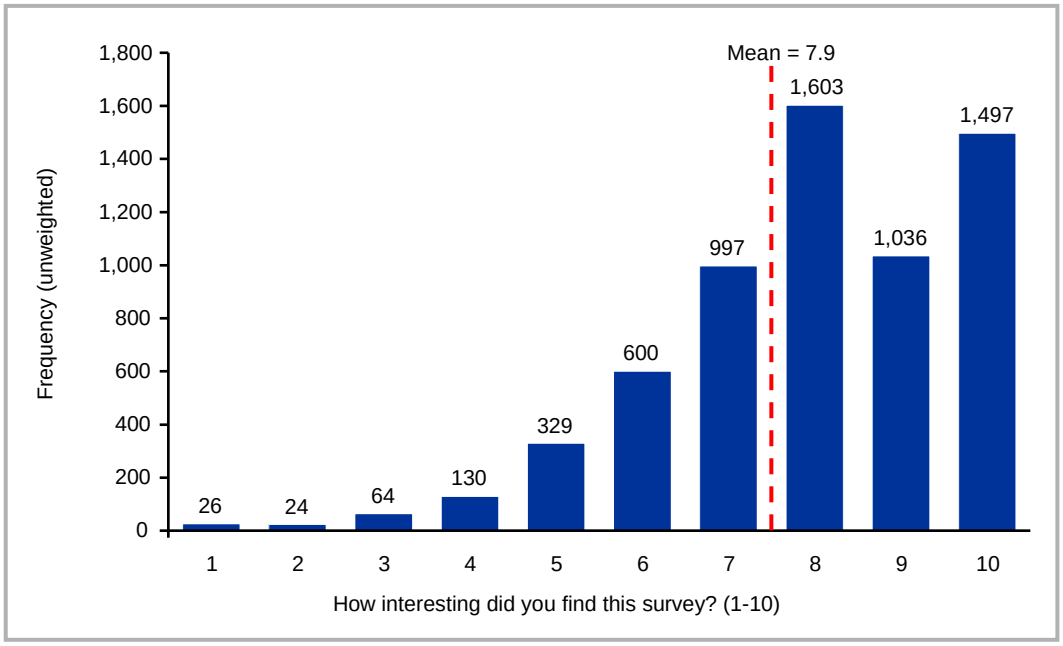
The Market Research Society Questionnaire design guidelines[37] also state that:

> *"A theoretically optimal research design can result in a repetitive or boring interview. Researchers should, wherever possible, seek ways of engaging and maintaining the respondent's interest."*

We sought to ensure that the survey was as engaging as was feasible and appropriate. Respondents were asked how interesting they found the survey on a scale of 1 (not at all interesting) to 10 (extremely interesting). They, in general, found the survey interesting to complete, with a mean score of 7.9. Almost 2/3 of all respondents gave a score of 8 or above.

[37] MRS (2006) point 8

Figure 16: Distribution of respondents based on interest



About the Authors

Human Capital is a strategy, research and development consultancy, established in 1996. We work with a wide range of companies who are interested in media, entertainment and telecoms. We have worked with almost every major media organisation in the UK, with our clients typically leading UK and international companies, regulators, investors and trade bodies.

Human Capital adhere to the Market Research Society code of Conduct and strictly comply with our obligations under the Data Protection Act.

Since 2008 we have been part of Ingenious Media, a market leader in media investment and advice and the largest independent investor in the UK media market (with over £5 billion invested to date).

References

Aadland D and Caplan AJ (2003) *Willingness to pay for curbside recycling with detection and mitigation of hypothetical bias*. Am J Agric Econ 85(2):492–502

Ariely D, Loewenstein G and Prelec D (2003*) Coherent Arbitrariness: Stable Demand Curves without Stable Preferences*. Quarterly Journal of Economics, Vol.118, No. 1: 73-105.

Axinn, Veltrop & Harkrider (2003), *Operationalizing the Hypothetical Monopolist Test*

Bateman I, Munro A, Rhodes B, Starmer C, Sugden R (2009) *Anchoring and yea-saying with private goods: an experiment.* Unpublished report

Blumenschein K, Johannesson M (2001) *Patient willingness to pay for lipid management services provided by pharmacists: an application of the contingent valuation method.* University of Kentucky, College of Pharmacy, Unpublished Report

Blumenschein K, Johannesson M, Blomquist GC, Liljas B, O'Conor RM (1998) *Experimental results on expressed certainty and hypothetical bias in contingent valuation.* South Econ J 65(1):169–177

Blumenschein K, Johannesson M, Yokoyama KK, Freeman PR (2001*) Hypothetical versus real willingness to pay in the health care sector: results from a field experiment*. J Health Econ 20(3):441–457

Blumenschein K, Blomquist GC, Johannesson M, Horn N, Freeman P (2008) *Eliciting willingness to pay without bias: evidence from a field experiment.* Econ J 118(525):114–137

Case Associates (2003) *Market Definition by Survey: Approaches, Acceptability and Pitfalls.* Economics of Competition & Regulatory Issues

Carson R. Flores N, and Meade N (2001) *Contingent Valuation: Controversies and Evidence.* Environmental and Resource Economics 19, no. 2 (June): 173-210.

Carlsson F, Frykblom P, Lagerkvist CJ (2005) *Using cheap talk as a test of validity in choice experiments.* Econ Lett 89:147–152

Charles River Associates (1997) *The Modernisation of DGIV* (see http://www.crai.com/ecp/assets/Modernisation_of_DGIV.pdf)

Champ PA and Bishop RC (2001) *Donation payment mechanisms and contingent valuation: an empirical study of hypothetical bias*. Environ Resour Econ 19(4):383–402

Champ PA, Bishop RC, Brown TC, McCollum DW (1997) *Using donation mechanisms to value nonuse benefits from public goods.* J Environ Econ Manag 33(2):151–162

Coate M and Fischer J (2008), *A Practical Guide to the Hypothetical Monopolist Test for Market Definition.* Journal of Competition Law & Economics, 4(4), 1031–1063

Commission of the European Communities (2002), *Commission Guidelines on Market Analysis and the Assessment of Significant Market Power under the Community Regulatory Framework for Electronic Communications Networks and Services*. OJ C 165/6, July 7th, para 52

Competition Commission (2003), *Market Investigation References: Competition Commission Guidelines* (see http://www.competition-commission.org.uk/rep_pub/rules_and_guide/pdf/cc3.pdf)

Competition Commission and Office of Fair Trading (2009) *Merger Assessment Guidelines: A joint publication of the Competition Commission and the Office of Fair Trading* (see http://www.oft.gov.uk/shared_oft/consultations/OFT1078con.pdf)

Cummings and Taylor (1999) *Unbiased value estimates for environmental goods: a cheap talk design for the contingent valuation method*

Diamond S (1994) *Reference Guide on Survey Research, Reference Manual on Scientific Evidence*

European Commission (1997), *Commission Notice on the definition of relevant market for the purposes of Community competition law*
(see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31997Y1209(01):EN:HTML)

European Commission (1997). *Notice on Market Definition, OJ C372.*

Ethier RG, Poe GL, Schulze WD, Clark J (2000) *A comparison of hypothetical phone and mail contingent valuation responses for green-pricing electricity programs*. Land Econ 76(1):54–67

Evans MF, Flores NE, Boyle KJ (2003) *Multiple-bounded uncertainty choice data as probabilistic intentions*. Land Econ 79:549–560

Farmer and Lipscomb (2008) *Conservative dichotomous choice responses in the active policy setting: DC rejections below WTP*

Federal Judicial Center (1995) *Manual for Complex Litigation.* Third Edition.

Federal Trade Commission (2002) *Commission roundtable on Understanding Mergers: Strategy & Planning, Implementation and Outcomes* (see www.ftc.gov/be/rt/mergerroundtable.htm)

Federal Trade Commission and US Department of Justice (2006) *Commentary on the Horizontal Merger Guidelines*

Harrison GW (2006) *Experimental evidence on alternative environmental valuation methods. Environ Resour*. Econ 34(1):125–162

Harrison GW and Rutström E (2008) *Experimental evidence on the existence of hypothetical bias in value elicitation methods*. In Plott C, Smith VL (eds) *Handbook of experimental economics results*. Elsevier Science, New York

Johannesson M, Blomquist GC, Blumenschein K, Johansson P-O, Liljas B, O'Conor RM (1999) *Calibrating hypothetical willingness to pay responses*. J Risk Uncertain 18(1):21–32

List JA (2001) *Do explicit warnings eliminate the hypothetical bias in elicitation procedures? Evidence from field auctions for sportscards*. Am Econ Rev 91(5):1498–1507

List JA, Gallet CA (2001) *What experimental protocol influence disparities between actual and hypothetical stated values*. Environ Resour Econ 20(3):241–254

Little and Berrens (2004) *Explaining disparities between actual and hypothetical stated values: further investigation using meta-analysis*

Loomis J, Ekstrand E (1998) *Alternative approaches for incorporating respondent uncertainty when estimating willingness to pay: the case of the Mexican spotted owl*. Ecol Econ 27(1):29–41

Lusk JL (2003) *Effects of cheap talk on consumer willingness-to-pay for golden rice*. Am J Agric Econ 85(4):840–856

Kahneman D., Slovic P. and Tversky, A. (1982) *Judgement Under Uncertainty: Heuristics and Biases*

Market Research Society (2006) *Questionnaire design guidelines*

Market Research Society (2006) *Internet research guidelines*

Massey (2000) *Market Definition and Market Power in Competition Analysis: Some Practical Issues*. The Economic and Social Review, Vol. 31, No. 4, October, 2000, pp. 309-328

Mitchell RC, Carson RT (1989) *Using surveys to value public goods: the contingent valuation method*

Moore, Bishop, Provencher and Champ (2009) *Accounting for Respondent Uncertainty to Improve Willingness-to-Pay Estimates*

Moresi S, Salop S and Woodbury J (2008) *Implementing the Hypothetical Monopolist SSNIP Test with Multi-Product Firms*

Morrison and Brown (2009) *Testing the Effectiveness of Certainty Scales, Cheap Talk, and Dissonance-Minimization in Reducing Hypothetical Bias in Contingent Valuation Studies*

Murphy JJ, Allen PG, Stevens TH and Weatherhead D (2005) *Meta-analysis of hypothetical bias in stated preference valuation*. Environ Resour Econ 30(3):313–325

Norwood FB (2005) *Can calibration reconcile stated and observed preferences?* J Agric Appl Econ 37: 237–248

Ofcom (2007) *Market definition and market power in pay TV: Annex 13 to pay TV market investigation consultation*

Ofcom (2008) *Consumer research on pay TV: Annex 10 to second pay TV market investigation consultation*

Office of Fair Trading (2004) *Market definition: Understanding Competition Law* (see http://www.oft.gov.uk/shared_oft/business_leaflets/ca98_guidelines/oft403.pdf)

Office of Fair Trading (2003), UKCLR 240

Paulter, P. (2003) *The Effects of Mergers and Post-Merger Integration: A Review of Business Consulting Literature*. Federal Trade Commission, Bureau of Economics (www.ftc.gov/be/rt/businesreviewpaper.pdf).

Poe GL, Clarke J, Rondeau D, Schulze WD (2002) *Provision point mechanisms and field validity tests of contingent valuation.* Environ Resource Econ 23:105–131

Ready RC, Navrud S, Dubourg WR (2001) *How do respondents with uncertain willingness to pay answer contingent valuation questions*. Land Econ 77(3):315–326

Samnaliev, M., Stevens T and More T (2006) *A comparison of alternative certainty calibration techniques in contingent valuation*. Ecological Economics 57: 507-519.

Schulze, W. D., R. C. d'Arge, and B.S. Brookshire *(1981) Valuing Environmental Commodities: Some Recent Experiments. Land Economics 57(2): 151-172.*

Shaikh, S.L., Sun L, and van Kooten G.C. (2007) *Treating respondent uncertainty in contingent valuation: A comparison of empirical treatments*. Ecological Economics 62, 115-125.

Slovic P. and Lictenstein S. (1971) *Comparison of Bayesian and Regression Approaches to the Study of Information Processing in Judgement*. Organizational Behaviour and Human Performance vol 6, 649-744.

South African Legal Institute (2003) *Competition Tribunal between Distillers Corporation (SA) Ltd and Stellenbosch Farmers Winery Group Ltd*, ZACT 15 (see http://www.saflii.org/za/cases/ZACT/2003/15.html)

Watson V and Ryan M (2007) *Exploring preference anomalies in double-bounded contingent valuation.* J Health Econ 26(3):463–482

Walters C and Reynolds G (2007). *The relevance of surveys to the 'relevant market'*

Walters C and Reynolds G (2007) *The use of customer surveys for market definition and the competitive assessment of horizontal mergers*, Journal of Competition Law and Economics, 1–21

Waterson M (2001) *The Role of Consumers in Competition and Competition Policy*. Warwick Economic Research Papers

Welsh, M.P., and Poe G.L. (1998) *Elicitation Effects in Contingent Valuation: Comparisons to a Multiple Bounded Discrete Choice Approach*. Journal of Environmental Economics and Management 36: 170-185.

Whitehead JC and Cherry T (2007) *Willingness to pay for a green energy program: a comparison of ex-ante and ex-post hypothetical bias mitigation approaches.* Resour Energy Econ 29(4):247–326

Appendix 1: Alternate certainty methodologies

The results quoted above are based on only considering those respondents who were "definitely sure" of the relevant response. Other methodologies are feasible. Most obviously, all respondents could be included regardless of uncertainty. For comparison we have also considered a highly conservative approach whereby uncertain respondents who said they would accept the price increase are *included,* but uncertain respondents who said they would change package or leave are *excluded*.

Table 3 below provides a comparison of the different SSNIP methodologies based on the proportion of respondents who switch from the focal product (this includes respondents who would cancel Pay TV entirely, move to a Pay TV provider outside the focal product, downgrade and, where applicable, upgrade).

Table 3: SSNIP switching behaviour by certainty methodology

SSNIP Methodology comparison

Proportion of respondents switching from the focal product	**Unfiltered responses**	**'Probably sure' respondents excluded**	**'Probably sure' changers excluded**
5% Sports	18.1%	21.1%	14.4%
5% Movies	26.5%	29.7%	22.6%
5% Top Tier	23.6%	27.5%	19.4%
5% Sports and Top Tier	19.0%	22.1%	15.5%
5% Movies and Top Tier	23.8%	27.8%	19.4%
10% Sports	37.1%	35.0%	40.3%
10% Movies	48.3%	44.9%	53.2%
10% Top Tier	40.8%	41.4%	39.9%
10% Sports and Top Tier	31.7%	30.2%	33.9%
10% Movies and Top Tier	38.4%	37.0%	40.4%

Appendix 2: Detailed switching analysis

Dual Sports (5%)

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.5%	0.2%	0.4%	0.2%	0.1%	0.7%	
Sky Movies 1 or 2	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Movies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.8%	0.5%	1.1%	0.7%	0.4%	1.0%	
Dual Sports	0.8%	1.7%	0.7%	1.6%	0.2%	0.0%	
Top Tier	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
							12.0%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	
Sky Movies 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Movies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.2%	1.0%	0.0%	0.0%	0.0%	
Dual Sports	0.5%	0.7%	0.0%	0.0%	0.0%	0.0%	
Top Tier	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%	
							3.2%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	Weekend Calls	Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.1%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.0%	0.1%	0.0%	0.0%	
					0.2%

BT, Basic TV Options, Bronze	0.1%
BT, Basic TV Options, Silver	0.1%
BT, Basic TV Options, Gold	0.3%
Top Up TV, TV favourites	0.0%
Top Up TV, PictureBox	0.0%
Top Up TV, TV favourites + PictureBox	0.1%
Stay with current package	75.7%
Cancel Pay TV Subscription	8.4%
Total	**100.0%**

Dual Sports (10%)

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.6%	0.3%	0.5%	0.7%	0.3%	1.2%	
Sky Movies 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Movies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	1.4%	1.3%	1.9%	1.9%	0.8%	1.7%	
Dual Sports	2.8%	1.3%	0.7%	1.1%	0.0%	0.0%	
Top Tier	0.2%	0.1%	0.0%	0.2%	0.0%	0.3%	
							19.5%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.1%	0.3%	0.5%	0.0%	0.0%	0.0%	
Sky Movies 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Movies	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.8%	0.7%	1.6%	0.0%	0.0%	0.0%	
Dual Sports	0.5%	1.2%	0.0%	0.0%	0.0%	0.0%	
Top Tier	0.3%	0.4%	0.2%	0.0%	0.0%	0.0%	
							6.5%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	Weekend Calls	Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.1%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.0%	0.1%	0.0%	0.0%	
					0.2%

BT, Basic TV Options, Bronze	0.0%
BT, Basic TV Options, Silver	0.2%
BT, Basic TV Options, Gold	0.6%
Top Up TV, TV favourites	0.0%
Top Up TV, PictureBox	0.0%
Top Up TV, TV favourites + PictureBox	0.1%
Stay with current package	55.3%
Cancel Pay TV Subscription	17.6%
Total	**100.0%**

Dual Movies (10%)

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.7%	0.6%	0.6%	1.3%	0.6%	3.3%	
Sky Movies 1 or 2	1.0%	1.2%	1.6%	2.5%	3.3%	6.0%	
Dual Movies	1.6%	1.2%	1.1%	1.5%	0.2%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	
Top Tier	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	
							28.3%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.0%	0.1%	2.5%	0.0%	0.0%	0.2%	
Sky Movies 1 or 2	0.0%	0.4%	3.0%	0.0%	0.0%	0.0%	
Dual Movies	0.0%	0.9%	0.2%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	
Top Tier	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	
							7.8%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	No PictureBox Weekend Calls	No PictureBox Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.2%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.3%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.0%	0.0%	0.0%	0.0%	
					0.5%

BT, Basic TV Options, Bronze	0.1%
BT, Basic TV Options, Silver	0.2%
BT, Basic TV Options, Gold	0.6%
Top Up TV, TV favourites	0.1%
Top Up TV, PictureBox	0.3%
Top Up TV, TV favourites + PictureBox	0.2%
Stay with current package	45.0%
Cancel Pay TV Subscription	16.9%
Total	**100.0%**

Top Tier (5%)

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.1%	0.0%	0.2%	0.1%	0.0%	0.6%	
Sky Movies 1 or 2	0.1%	0.0%	0.2%	0.0%	0.0%	0.1%	
Dual Movies	0.1%	0.1%	0.1%	0.3%	0.1%	1.2%	
Sky Sports 1 or 2	0.2%	0.1%	0.2%	0.1%	0.1%	0.4%	
Dual Sports	0.6%	0.3%	0.5%	0.7%	0.5%	2.6%	
Top Tier	0.5%	0.3%	0.4%	1.2%	0.4%	0.0%	
							12.4%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.0%	0.1%	0.3%	0.0%	0.0%	0.0%	
Sky Movies 1 or 2	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	
Dual Movies	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.2%	0.8%	0.0%	0.0%	0.0%	
Dual Sports	0.3%	0.3%	1.2%	0.0%	0.0%	0.0%	
Top Tier	0.6%	0.7%	0.0%	0.0%	0.0%	0.0%	
							5.3%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	No PictureBox Weekend Calls	No PictureBox Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.0%	0.1%	0.0%	0.0%	
					0.1%

BT, Basic TV Options, Bronze	0.1%
BT, Basic TV Options, Silver	0.0%
BT, Basic TV Options, Gold	0.4%
Top Up TV, TV favourites	0.1%
Top Up TV, PictureBox	0.0%
Top Up TV, TV favourites + PictureBox	0.1%
Stay with current package	72.3%
Cancel Pay TV Subscription	9.2%
Total	**100.0%**

Top Tier (10%)

Sky	1 Pack	2 Packs	3 Packs	4 Packs	5 Packs	6 Packs	
No Premium channels	0.2%	0.1%	0.1%	0.1%	0.1%	1.0%	
Sky Movies 1 or 2	0.1%	0.1%	0.1%	0.1%	0.0%	0.3%	
Dual Movies	0.1%	0.3%	0.4%	0.4%	0.2%	2.1%	
Sky Sports 1 or 2	0.2%	0.3%	0.3%	0.3%	0.2%	0.6%	
Dual Sports	1.0%	0.4%	0.6%	1.0%	0.7%	4.7%	
Top Tier	1.5%	0.8%	0.7%	1.4%	0.5%	0.0%	
							21.0%

Virgin	M	L	XL	M	L	XL	
No Premium channels	0.1%	0.1%	0.5%	0.0%	0.0%	0.0%	
Sky Movies 1 or 2	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	
Dual Movies	0.1%	0.2%	1.1%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.2%	1.0%	0.0%	0.0%	0.0%	
Dual Sports	0.3%	0.6%	2.8%	0.0%	0.0%	0.0%	
Top Tier	0.8%	1.6%	0.0%	0.0%	0.0%	0.0%	
							9.6%

Tiscali	No PictureBox Weekend Calls	No PictureBox Anytime Calls	No PictureBox Weekend Calls	No PictureBox Anytime Calls	
Base TV including phone line rental	0.0%	0.0%	0.0%	0.0%	
Sky Movies 1	0.0%	0.0%	0.0%	0.0%	
Sky Sports 1 or 2	0.0%	0.0%	0.0%	0.0%	
Dual Sports	0.0%	0.1%	0.0%	0.0%	
Sky Movies 1 + All Sky Sports channels	0.1%	0.1%	0.0%	0.0%	
					0.4%

BT, Basic TV Options, Bronze	0.0%
BT, Basic TV Options, Silver	0.1%
BT, Basic TV Options, Gold	0.8%
Top Up TV, TV favourites	0.1%
Top Up TV, PictureBox	0.1%
Top Up TV, TV favourites + PictureBox	0.3%
Stay with current package	51.9%
Cancel Pay TV Subscription	15.8%
Total	**100.0%**