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## Conference Paper

# Would you prefer a set menu or à la carte? An empirical study of multiple services and choices of consumer in the Swedish telecommunications market

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## **Would you prefer a set menu or à la carte?**

### **An empirical study of multiple services and choices of consumer in the Swedish telecommunications market**

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#### **Abstract**

Received analyses state that firms can use a bundling strategy to retain customers and capture new customers. Factors that determine the bundling strategy include product discount, service provider and customer characteristics. Consequently, this study addresses the fundamental question: What are the key determining factors that explain the probability that a consumer will buy multiple services? A Poisson regression model is employed to examine whether the product discount, service provider, socio-economic variables and geographical location impact on consumer decisions. Data from a national survey in 2009 commissioned by Post-och Telestyrelsen, the Swedish telecommunications regulator, are analysed. The results clearly show that the discount, service provider and income of the consumer affect the consumer's buying decision. For example, a consumer who receives a discount or has a high income is more likely to buy a bundle service (set menu) or select more services from the current service provider into his basket than a consumer who buys an individual service (à la carte).

Service providers, cable TV operators and telecommunications carriers can also lock-in their consumer and expand their market position from one particular service to another using bundle services. Thus, this may be the time for the telecommunications regulator to consider the market definition.

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## **Would you prefer a set menu or à la carte?**

### **An empirical study of multiple services and choices of consumer in the Swedish telecommunications market**

#### **Introduction**

The recent increase in technological convergence of voice, video and data has facilitated a wide range of services, leading to fiercer competition on the market. To sustain the growth of telecommunications service providers, the firms are implementing a number of strategies to lock in current consumers and attract new ones to the current and new markets. For example, offering wide and deep range of telecommunication services or putting their services into a basket as a set of menus together with discount (bundling<sup>1</sup>) rather than offering an individual service or à la carte. These strategies aim to win consumer loyalty and also can use for entry deterrence in order to maintain the market position of service providers (Bughin and Mendonça, 2007; Lee, 2009).

The combination of multiple services could be any combination of telecommunication services, including voice, television and Internet access from the same provider. The bundling can be seen as a subset of multiple services which is a combined package offering more than one communication service from the same service provider at a single price. The most common multiple services and bundle service are the combination of fixed telephony and fixed Internet broadband access and a combination of fixed telephony, cable TV and fixed Internet broadband.

It has been observed among the EU27 countries that bundles have been adopted by a significant proportion of households in a number of countries since 2006. One-fifth of Europeans said that their households bought more than one communication services as part of a bundle at the end of 2006. By the end of 2009, on average, 38% of Europeans bought a bundle service (European Commission, 2007 and 2010). This number indicates that bundle packages are becoming increasingly popular, with more than one-third of households on average subscribing to a package that includes two or more services. There are two main reasons that households buy the bundle services: single billing and the fact that it is cheaper than paying separately for each service.

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<sup>1</sup> If the character is considered when the service is sold, there are two types of bundling: pure and mixed. Pure bundling refers to the case in which the consumer can only buy a single package or nothing at all. In contrast, in mixed bundling, the individual component and the bundle are both available on the market. The bundle is sold at a discount off the sum of the prices of the components (European Commission, 2005, p.54).

Most of the EU27 countries exhibited an increase in the adoption of bundling, and Sweden is no exception. Service providers in the Swedish communication market increasingly offered a combination of fixed telephony, mobile telephone, Internet and television in bundled packages for a single subscription before 2005. Sweden demonstrated the biggest percentage point increase (22%) between 2006 (21%) and 2009 (43%). There is also evidence that most countries with a high rate of broadband Internet access, including Sweden, have a high rate of bundling (European Commission, 2010).

Accordingly, this paper aims to investigate the determinant factors of buying multiple services from the same services provider in the Swedish telecommunications market. The bundle services are taken into account without any specific combination<sup>2</sup>. A Poisson model is employed to examine empirically whether the service discount, service provider, socio-economic variables and geographical area have a systematic link to the decision by the consumer. The data from a national survey in 2009 commissioned by Post-och Telestyrelsen (PTS), the Swedish telecommunications regulator, are used for the analysis. The potential impacts of the variables, together with the policy recommendations, are discussed based on the findings.

The next section discusses the literature review, and the third section provides a snapshot of bundle services in Sweden. This is followed by a description of the data and method in the fourth section. The results and discussions are presented in the fifth section. In the last section, the conclusion is summarized together with its contribution to the telecommunications regulator.

## **Literature review**

Important theoretical literature provides a similar finding that a service provider may be able to use a bundling strategy as price discrimination to increase its market share and that this may affect competition (Stigler, 1963; Adam and Yellen, 1976; McAfee et al., 1989). These three seminal works found that a multi-product monopolist might choose to bundle if the price of the two goods are correlated negatively across consumers. The most of feature bundle service in the telecommunication industry are complements of each other. This could create economies of scope for the service provider in terms of digital economics because it makes sounds, pictures and data a perfect substitute that can be injected into electronic pipes (Crampes and Hollander, 2006). The service provider can use the heterogeneity of consumers by offering them the choice of a bundle. Bundling reduces consumer choice, and consumers are then forced to self-select the bundle that they feel best meets their needs

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<sup>2</sup> The most common bundled package is double-play, which is a combination of fixed telephony and fixed Internet broadband. The second type of bundle service is triple-play, which offers a combination of fixed telephony, cable TV and fixed broadband in a service package. The last bundled service is quadruple-play, which offers fixed telephony, fixed broadband, cable TV and mobile telephony.

(Schmalensee, 1984). For service providers, it is easier to predict consumer valuations for the bundle than for individual services (Bakos and Brynjolfsson, 1999). Consumer self-selection is therefore desirable as it exploits the pricing discrimination attributes of bundling and captures more consumer surplus.

At the same time, firms are creating switching costs to the customers when firms offer bundling services (Maturates and Regibeau, 1992; Nalebuff, 2004). The consumers' switching costs can be categorized at least into three groups: transaction costs, learning costs and contractual cost (Klemperer, 1987). NERA (2003) elaborated further, however, and mentioned that consumer switching costs can be categorized into five groups: transaction costs, search costs, learning costs, compatibility costs, and contractual costs. For instance, in context of bundle service, consumers will get service and receive a single bill from a single service provider if they subscribe for bundle service. This reduces their transaction cost and learning in term of payment and contacting the back office which is contrast to the case of buying several services from different service providers. Thus, the consumers prefer not to patronize more than one firm.

Search costs arise because consumers have to gather information about other service providers. The potential effects of bundling on competition and the information costs imposed on consumers by complex menus of telecommunication services seem to be the most significant considerations for social welfare (Papandrea et al., 2003).

Bundling in itself does not create added value for consumers, thus a discount must be offered to motivate at least some consumers to buy the bundle (Stremersch and Tellis, 2002). The discount could be monetary (i.e., 10% off) or non-monetary (i.e., one service free). These discounts can be offered either immediately on purchase or sometime after purchase (Agarwal and Frambach, 2003). However, consumers need to sign a long term-contract, normally 6-24 month, in order to get the discount offer. If the subscribers want to break the contract termination fee is applied and all services need to be cancelled. This is so called 'contract costs'.

The contract cost has an important role in bundling service. Firms can exploit the advantage of contract cost with a bundle discount, to encourage customer loyalty. Economides (2010) called the difference between the price under the bundling condition and the à la carte price a penalty for not accepting the bundle, a 'disloyalty penalty'. Agarwal and Frambach (2003) investigate the way consumers respond to customizable bundles using individual data together with a joint conditional model. They examine the impact of promotions (discount packages) and brand preference on bundling, brand choice and bundle size decisions in telecommunications services. They found that discount packages influence brand choice and, secondarily, bundling preference, but that they have little impact on bundle size.

Several contributions show that it is not only the discount package that affects the decision of the consumer but also the consumer characteristics, i.e., the consumer evaluation process (Yadav and Monroe, 1993; Yadav, 1994), supplier characteristics (Simonin and Ruth, 1995; Nam et al., 2006) and attitude of the consumer towards the service (Bouwman et al., 2007).

The choice of product and the character of the product can be as important as price in influencing the consumer's decision. Crampes and Hollander (2006) explore the effects of digital convergence between telephony, television and Internet into triple-play. The outcome of the triple-play competition is likely to depend on the speed of development of new technologies and the adaptation of the regulatory environment. In the short run, telephone companies will enjoy an advantage attributable to switching costs. This advantage will be lost, however, as younger subscribers switch to telephony on the Internet. Like the study by Nam et al. (2006), Crampes and Hollander consider what kinds of service feature among the five emerging mobile services (T-DMB, S-DMB, WiBro, HSDPA and Telematics) in Korea using the survey data and the conjoint analysis. Their results show that TV service is the most favoured of the attributes, followed by voice service in second position, and Internet and location-based service in third and fourth place respectively.

To sum up, bundling is likely to play a major role for the telecommunications industry in the future due to technology convergence. Previous literature shows that bundle services play a role as an entry barrier, price discrimination tool and cost saving for the service provider as well as being a powerful entry device for new entrants. In terms of consumers, bundling seems to raise switching costs through the discount package jointly with brand preference and choice of bundle services, although consumers benefit from the single bill.

### **A snapshot of bundle service in Sweden**

At the initial stage, the bundle package was offered as double-play, and it has been the most popular of the bundle packages. Double-play accounts for almost 60% of the bundle services. By mid-2010, more than 80% of double-play users had applied for fixed telephony combined with broadband Internet access.

Recently, triple-play, in particular fixed telephony, broadband and TV service, has also played an important role in the bundle service. By mid-2010, four hundred thousand households used this package. It makes up more than 40% of the bundle services in contrast to quadruple-play, which is not yet a popular service. Only five thousand households used this service.

**Table 1.** Number of double-, triple- and quadruple-play bundles, and households buying bundling packages

Type of bundle	Unit: thousands				
	Jun 2008	Dec 2008	Jun 2009	Dec 2009	Jun 2010
<i>Double-play:</i>	336	440	478	610	702
Fixed telephony and broadband	254	340	370	496	593
Fixed telephony and television	13	16	18	20	21
Fixed telephony and mobile telephony		8	16	14	17
Television and broadband	68	74	70	76	71
Other combinations		2	4	4	
<i>Triple-play:</i>	235	299	405	442	483
Fixed telephony, broadband and television	203	252	357	394	447
Fixed telephony, broadband and mobile telephony	32	47	48	48	36
<i>Quadruple-play:</i>	2	2	1	4	5
Fixed telephony, broadband, television and mobile telephony	2	2	1	4	5
<b>Total</b>	<b>573</b>	<b>740</b>	<b>884</b>	<b>1 057</b>	<b>1 190</b>
Bundle penetration (per 100 households)	32%		43%		

Source: PTS (2010) and EU Commission (2009, 2010)

In the Swedish telecommunications market, there are many telecommunications carriers providing different kinds of telecommunications services. Not all telecommunications carriers provide bundle packages however. The Swedish telecommunications regulator reported that seven telecommunications providers offered bundle packages (see Table 2). Two of them provide all types of bundle packages. They are Bredbandsbolaget, or Telenor, and Telia. Tele2 and ComHem supply double- and triple-play packages. AllTele and Bredband2 only provide a double-play package. The rest do not offer bundle packages but sell individual services, even though they provide more than one service (see Table 2).

**Table 2.** Services offered by telecommunications carriers

<i>Operator</i>	Core business	à la carte				Set menu		
		Fixed telephony	Fixed broadband	Cable TV	Mobile	Double-play	Triple-play	Quadruple-play
Bredbandsbolaget/Telenor	Telecom	●	●	●	●	●	●	●
Telia	Telecom	●	●	●	●	●	●	●
Tele2	Telecom	●	●	●	●	●	●	
ComHem	Cable TV	●	●	●		●	●	
Glocalnet	Telecom	●	●		●	●		
AllTele	Telecom	●	●			●		
Bredband2	Telecom	●	●			●		
Universal Telecom	Telecom	●	●		●			
ACN	Telecom	●			●			
Megaphone	Telecom	●			●			

Source: PTS (2010), company websites and compiled by the authors

Telia was among the first telecommunications carriers to provide bundle services. Telia used its market position in the fixed telephony service for broadband Internet service by requiring end-users to have a telephone subscription for the provision of a broadband access line. PTS ordered Telia to stop this action from 2006 however (PTS, 2007). Telia started offering digital television combined with broadband from the last quarter of 2006. At the same year, Tele2, which is the second largest telecommunications operator and ComHem, an incumbent in cable TV service started to offer a bundles service to the market. Tele2 started to use its fixed network by supplying a double-play package at the initial stage and began to provide triple-play, while ComHem offered its customers a combination of broadband, fixed telephony and television (PTS, 2007). Later, Bredbandsbolaget has officially operated fully synergized with Telenor to offer all kinds of bundle services (PTS, 2006).

Table 3 displays an individual price for telecommunications service and a price for bundle packages. Unsurprisingly, it is cheaper to buy a bundle package than to buy the services separately. ComHem offers a 47% reduction if the customer buys double-play while Telia only offers a 5% discount. Telia gives the highest discount on the Triple-play package compared with other bundle providers.

**Table 3.** Price comparison between à la carte and the set menu

<i>Operator</i>	2 individual services /double-play			3 individual services / triple-play		
	2 individual Services	Double-play	Saving (%)	3 individual Services	Triple-play	Saving (%)
Bredbandsbolaget (Telenor)	298	248	17	397	347	13
Telia	358	339	5	457	339	26
Tele2	269	199	26	368	287	22
ComHem	273	145	47	372	289	22

Source: <http://www.telepriskollen.se>, company websites and compiled by the authors



To sum up, all of the telecommunications providers that offer bundle packages also sell an individual telecommunications service separately with market recognition. It may be more profitable and efficient for the carrier side to supply bundle services, however, due to economies of scope. It may also be of more benefit to the consumer to buy telecommunications services as one-stop shopping and to have the same bill for all the telecommunications services with fewer payments compared with buying them separately. Nevertheless, service providers could also lock-in their customers through the bundle packages that provide the discounts.

## Data and method

### *Data*

To examine the household demand for bundle packages, data were obtained from a random nationwide postal mail survey of Swedish households during August and September 2009. The questionnaire was prepared in consultation between PTS and TNS SIFO – a research company. The questionnaire consists of about 78 questions that cover several types of telecommunications services, including fixed telephone, IP telephone, mobile telephone, and Internet and broadband. Only four of the questions that are specifically related to bundle package usage are used in this study however. Seven questions are included that represent socio-economic background, i.e., gender, age, household size, type of housing, county of residence, household income and level of education.

In this study, the total number of observations is 1,292, excluding omissions and abnormalities. Table 4 presents the selected sample characteristics are compared with the data from Statistika centralbyrån (2009) which is a Swedish national statistics and show that demographics for the sample are fairly representative of Swedish household. The typical respondent is male, with the secondary school degree. The respondent resided in his own house household with 1.5 others member and age of household head is 48 years old.

**Table 4.** Socio-economic background

Characteristics	Total Sample	The Swedish National Statistics
Age (head of household - mean)	48.65	44.00
Education: primacy school	18%	19%
Education: secondary school	43%	49%
Education: college and university	37%	32%
Gender: male	53%	49.77%
Household size (mean)	2.5	2.1
Housing: renting a private apartment	24%	34.35%
Housing: renting a co-operative apartment	21%	14.78%
Housing: having own house	55%	50.87%

In the questionnaire, the respondent was asked whether he/she received a discount when buying one or more services from the same telecommunications carrier. If the respondent bought multiple services from the same provider and did not receive a discount, he/she was considered an ‘à la carte buyer’. Table 5 reports that 46.74% of the respondents bought only a single service and 11% bought more than one service from the same provider without a discount.

Another type of telecommunications buyer is the *set menu buyer*. Of the respondents, 42% are this type of buyer, which complies with the EU Commission’s survey in 2009. This may indicate that 42% of households in Sweden bought a bundle package. In addition, 49% and 40% of the set menu buyers bought double- and triple-play packages respectively. The rest bought a quadruple-play service.

**Table 5.** À la carte and set menu distribution

Distribution of services	%
<i>Single service</i>	46.74
<i>A la carte (No discount)</i>	11.00
2 Services	9.41
3 Services	1.59
<i>Set Menu (with discount)</i>	42.26
Double play	21.17
Triple play	17.53
Quadruple play	3.57

### Method

This study deals with the actual consumption of telecommunications services, including fixed telephony, fixed broadband, cable TV and mobile telephony, from the same telecommunications carrier. The decision to buy one, two, three or more services from the same operator is an area of interest in this study. Thus, count-data models can be considered to apply, as they can be used for the small values and the clearly discrete nature of the dependent variable, and they can improve at least on the squares and linear model with a specification that accounts for these characteristics (Green, 2000). One of the count-data models that have been widely used in Economics is the Poisson model.

The model considers the number of telecommunications services bought from the same telecommunications operator by  $N$  consumers. Supposing  $Y_i$  is the number of telecommunications services, then the number of  $Y_i$  is 1, 2, 3 or 4 depending on how many services have been subscribed to from the same carrier by the consumer  $i - th$ . Famoye (1993) mentions that the Poisson regression can be applied if it specifies the distribution of  $Y_i$  as Poisson with mean:

$$E(Y_i|x_i) = \mu_i = c_i f(x_i, \beta) = \exp(x_i, \beta) \quad (1)$$

The probability function of  $Y_i$  is given as:

$$f(y_i; \mu_i) = \frac{\mu_i^{y_i} e^{-\mu_i}}{y_i!}, y_i = 0, 1, 2, 3, \dots \quad (2)$$

where  $\mu_i$  is the expected value of random variable  $Y_i$  and  $\beta$  is a  $k$ -dimensional vector of regression parameters. This probability function will be valid if the conditional mean and the conditional variance equal  $\mu_i$  or the equidispersion property (Consul, 1989; Famoye, 1993; Cameron and Trivedi, 2009).

$$\begin{aligned} E(Y) &= \mu \\ \text{Var}(Y) &= \mu \end{aligned} \quad (3)$$

The equidispersion property is commonly violated in applied work, however, because overdispersion is common (Cameron and Trivedi, 2009). Overdispersion means that the conditional variance exceeds the conditional mean. It causes a downward bias in the estimated covariance matrix, with the asymptotic standard errors being too small. This results in overstated significance (Winkelmann and Zimmermann, 1995).

This study is also taken into the validity of the equidispersion property of the Poisson regression. The specification test has been conducted and it reports an overdispersion in the model. One option to overcome this problem is to use the negative binomial model. Cameron and Trivedi (2009) suggest that Poisson regression with the robust option can also be used to fix the problem however. Poisson regression with the robust option is therefore applied to this study.

To summarize, this study quantifies the factors determining the number of telecommunications services from the same telecommunications carrier. The factors under consideration include telecommunications provider, discount, and socioeconomic and geographic factors (see Table 10).

**Table 6.** Description of variables

Variable	Description	Mean	Std.Dev.
Number of services subscribing from the same provider (Dependent variable)	= 1 if the respondent subscribes one telecom service from same provider = 2 if the respondent subscribes two telecom services from same provider = 3 if the respondent subscribes three telecom services from same provider = 4 if the respondent subscribes four telecom services from same provider	1.7951	0.8717
TELIA	= 1 if the respondent is customer of Telia; = 0, otherwise	0.5220	0.4997
TELE2	= 1 if the respondent is customer of Tele2; = 0, otherwise	0.1305	0.3370
COMHEM	= 1 if the respondent is customer of Comhem; = 0, otherwise	0.0903	0.2867
BREDBANDSBOLAGET	= 1 if the respondent is customer of Bredbandsbolaget; = 0, otherwise	0.0637	0.2444
GLOCALNET	= 1 if the respondent is customer of Glocalnet; = 0, otherwise	0.0508	0.2197
DISCOUNT	= 1 if the respondent get discount when buying more services; = 0, otherwise	0.4332	0.4957
MALE	=1 if the respondent is male;= 0, otherwise	0.5266	0.4995
HHLESS35	= 1, if the respondent is aged less than 35 years; = 0, otherwise	0.2109	0.4081
HHMORE55	= 1, if the respondent is aged more than 55 years; = 0, otherwise	0.3877	0.4874
HHSIZE	Number of household members	2.5073	1.2388
ED1	=1, if the respondent has primary school as highest education ; = 0, otherwise	0.1889	0.3916
ED2	=1, if the respondent has secondary school as highest education ; = 0, otherwise	0.4294	0.4952
HOUSE1	=1, if the respondent renting an apartment ; = 0, otherwise	0.2291	0.4204
HOUSE2	=1, if the respondent renting a co-operative apartment ; = 0, otherwise	0.2071	0.4054
LINCOME	=1 if the annual household income is less than 200 kSEK; = 0, otherwise	0.1214	0.3267
MINCOME	=1 if the annual household income is between 200 - 400 kSEK; = 0, otherwise	0.3005	0.4586
BIGCITIES	=1, if the respondent living in Stockholm or Göteborg or Malmö ; = 0, otherwise	0.4036	0.4908

## Results and discussion

The estimation results are shown in Table 7. The estimated model provides a pseudo  $R^2$  statistic that measures goodness of fit of the model 0.0894. It suggests that the model appears to fit well for a cross-section of data. The marginal effects report the partial impact of changes in the corresponding variable for the likelihood of household usage of telecommunications service(s), i.e., multiple services; all other factors are constant.

**Table 11.** Estimation results

Variable	Marginal effect	Standard error	z-test	p-value
DISCOUNT***	1.2307	0.0389	31.60	0.000
TELIA***	0.4186	0.0395	10.59	0.000
TELE2***	0.1729	0.0543	3.19	0.001
COMHEM***	0.5809	0.0581	10.00	0.000
BREDBANDSBOLAGET***	0.2361	0.0701	3.37	0.001
GLOCALNET	0.1110	0.0685	1.62	0.105
MALE	-0.0127	0.0313	-0.41	0.683
HHLESS35	-0.0276	0.0372	-0.74	0.458
HHMORE55	0.0134	0.0403	0.33	0.739
HHSIZE	0.0006	0.0138	0.04	0.966
ED1	0.0548	0.0524	1.05	0.296
ED2**	0.0628	0.0334	1.88	0.060
HOUSE1	-0.0344	0.0406	-0.85	0.396
HOUSE2	-0.0332	0.0411	-0.81	0.420
LINCOME**	-0.1284	0.0531	-2.42	0.016
MINCOME**	-0.0751	0.0346	-2.17	0.030
BIGCITIES*	-0.0530	0.0323	-1.64	0.100
Number of observation	= 1295			
Wald chi2(17)	= 2787.93			
Prob > chi2	= 0.0000			
Log pseudolikelihood	= -1669.0675			
Pseudo R2	= 0.0894			

Note: \*\*\*, \*\*, \* significant at 1%, 5%, and 10% level respectively

Discount (DISCOUNT) has a positive effect on the decisions of consumers. It suggests that consumers who receive discounts have a higher probability (1.23 times) of buying bundle services (set menu) and selecting more services to be included in the bundle package than consumers who buy individual services (à la carte). The character of the discount offered can lock in and stimulate the consumer to include more services in the bundle. This result fits well with prior literature (Stremersch and Tellis, 2002; Agarwal and Frambach, 2003; Crawford, 2008; Economides, 2010).

The service providers have a significant positive relationship to the number of the services, in particular, ComHem and Telia. This indicates that the current consumers of these providers are locked-in. They would prefer to add more telecommunications services to ComHem or Telia compared to others. The search cost and the uncertain cost from the other service provider may also encourage consumers to use the service from the service provider of which they already have experience. The marginal effect for ComHem suggests that the loyalty of ComHem customers (0.58) is higher than that of Telia customers (0.41). In fact, ComHem offers a cheaper price plan than Telia for double- and triple-play. ComHem uses its advantage in the cable TV (video) market to keep current consumers and attract new ones. ComHem has been more successful in bundling strategies than Telia and others. At the same time, Telia uses its market power in voice and data services to lock in consumers and capture new ones by offering the same price for double- and triple-play.

Lastly, the level of education, income and area of residence can also explain the decisions of consumers on multiple services. If the consumer has secondary school as the highest education (ED2), the consumer is more likely to buy multiple services compared with others. The probability of buying multiple services also tends to decrease if the consumer has a low (LINCOME) or medium income (MINCOME) compared with if he/she has a high income. This points that a larger number of services requiring a higher income. The consumers who earn a high income are more able to afford a large bundle. The consumers who live in the three largest cities (Stockholm, Gothenburg and Malmö) in Sweden are also less likely to apply for multiple services.

To summarize, the results of this study show that cable TV operators and telecommunications provider multiple service can create lock-in their current consumers by offering discount or the bundle services. However, current consumer of cable TV operator confront with the highest switching cost compared to consumers of telecommunication providers.

### **Policy implication**

The current situation shows that the bundling services could lead to a high switching cost for the consumer through the discount with the long duration of the bundling contract. The existing complexity of the price menu in bundle packages can lead to a high search cost. The bundling service used in the telecommunications market is mixed bundling. The consumer needs to obtain information and learn about the quantity, quality and price combinations offered by various service providers (Papandrea et al., 2003). For example, the consumer could choose different speeds of broadband connection and different TV content with different prices. This leads to a complex task for the consumer to decide which service provider suits his/her needs at a reasonable price. A bundling strategy can also create high consumer switching costs, as the bundling packages offer specified periods for consumers to stay with the service providers.

Interestingly, the Swedish telecommunications regulator realizes the complexity of price plans. It provides price information for all kinds of telecommunications services including bundle packages on the website. This is helpful for consumers as there is a function for them to select their preferences for a specific service, and the website then gives them a suggested provider. This can help consumers lower the switching costs for a particular search cost. Consumers will still need to sign a contract with the service provider of between 6 and 24 months in the Swedish market however. The switching costs for the consumer can then not be lowered, as the telecommunications regulator expected. This suggests that the telecommunications regulator should take this problem into consideration in order to reduce consumer switching costs.

A bundle service is critical for the telecommunications regulator to determine the market definition for bundle service. The players that are implementing a bundling strategy are the cable TV providers and the telecommunications carriers. In general, the market definition of telecommunications services is defined explicitly, i.e., fixed telephony, mobile telephony and the Internet market. These markets are regulated by the telecommunications regulator. The market definition does not cover the bundling service however. This may lead to different results when the telecommunications regulator examines the competitive situation in each individual telecommunications market. An examination of the bundling service, i.e., double-play (broadband Internet and fixed telephony), for example, may suggest that the bundling service has no competitive environment, although when examining competition in broadband Internet access or fixed telephony alone, the result may indicate that these two different markets are competitive. Thus, it is important for the telecommunications regulator to determine the market definition for bundling services separately.

It is also crucial for the competition authority to consider the impact of a bundling discount on the entry deterrence and/or foreclosure issue. As mentioned, the consumers of the largest telecommunications provider and cable TV operator are more likely to buy additional telecommunications services from the same carrier. The competition authority needs to investigate the price strategies of the incumbents. They may use these strategies to squeeze out the smaller providers and prevent newcomers from entering the market. These issues could be investigated in future research however.

## **Conclusion**

According to the European survey, Sweden shows a 22% increase in bundling service adoption between 2006 and 2009. To understand the multiple and bundling services situation in the Swedish telecommunications market better, this study discusses the current situation of multiple and bundle services and examines the determining factors that explain the consumers' decision to buy multiple services. This study was conducted using the PTS survey 2009. The model is estimated using the

Poisson regression model. The effect of discount, service provider, socio-economic background, type of housing and area of residence on the likelihood of buying multiple services is analysed through an estimated model. The results show that the discount and service provider, education, level of income and area of residence are the major determinants for multiple services adoption.

This study confirms the theoretical works that service providers use a discount as a price discrimination instrument together with their market positions, cable TV and as telecommunications service incumbents, to lock in existing consumers and attract new ones. The incumbent in the cable TV and telecommunications services expands its market position by adding other relevant services to its core ones. The issue of switching cost and market definition for the bundling service become important issues for the telecommunications regulator to investigate further.

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