

The Fascination of Flat-Rates – How Tariffs Influence Consumption Behaviour

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Abstract

The impact of tariff choices on consumption behaviour is a highly relevant topic for researchers and practitioners alike. Especially service companies are interested in forecasting the impact of their tariff structure on the tariff choice and utilization behaviour. However, most of the existing research focuses only on the tariff choice without taking the later usage behaviour into account. Our research shows, that this point of view falls short on explaining the impact of possible tariff adjustments. Hence, we assume that the usage intensity of consumers might be determined by their tariff choice in the first place. In order to explore this proposition, we conduct a first explorative study that identifies the influence of tariff choice on consumption behaviour and explores some reasons for this phenomenon.

Introduction

In today's marketplace we find various services, which rather offer a service potential than a direct consumption at the point of purchase. Examples are phone contracts, season passes for sports or cultural events as well as health club plans. In all these settings the tariff choice significantly precedes consumption. Therefore service providers in particular are interested in the impact of their tariff structure on the tariff choice and utilization behaviour.

Questions that arise in this context are what determines the tariff choice and how this tariff choice might have an influence on consumption behaviour. Some of the influencing factors on the tariff choice have already been extensively discussed in the literature. There is research that shows that some consumers prefer a flat-rate contract to a pay-per-use contract even if they would be economically better off with the other alternative. However, most of the existing research focuses only on the tariff choice without taking the later usage behaviour into account. Our research shows, that this point of view falls short on explaining the impact of possible tariff adjustments. A service provider is not only interested in knowing how many contracts he sells but also in the usage intensity of his service facilities. Hence, we will show that the usage intensity of each individual user might be determined by his tariff choice in the first place. In order to do this a theoretical foundation will be established before tackling the research questions in a first explorative study.

Literature Review

Taking a look at the existing literature on the impact of different tariffs and prices in regard of the tariff choice we find a wide variety of articles dealing with this topic. There is a branch of research dedicated to analysing the impact of different payment methods (Hirschmann, 1979; Prelec and Simester, 2001; Kamleitner and Kirchler, 2006), the role time of payment plays (Gourville and Soman, 1998; Soman, 2001) or the impact of bundling strategies (Soman and Gourville, 2001). Moreover there is also research on influencing factors in regard of the tariff choice. Starting in the 1980's, Train et al. (1987) did some research on what determines a consumer's decision when deciding on a calling plan. They analysed the usage data of telecommunication customers and found out that many customers tend to prefer a flat-fee tariff to a pay-per-use tariff even if the latter would be economically preferable. In line with that, a

range of research projects tries to identify the reason for this “flat-rate-bias” (e.g. Kridel and Lehman and Weisman, 1993; Schulze and Gedenk, 2005).

By taking a closer look at research on influencing factors that has been conducted in the past, three main motives can be identified. First, some consumers appear to be unable to forecast their future consumption behaviour accurately. Consequently, those customers tend to choose a tariff with an allowance being too high according to their actual usage intensity. This phenomenon is called the “overestimation effect” (e.g. Nunes, 2000). Another approved motive is the “taximeter effect”. It explains why consumers tend to have an aversion against ongoing payments. This effect was named after the unpleasant feeling that occurs when riding a taxi and constantly seeing the taxi clock ticking (Prelec and Loewenstein, 1998; Lambrecht and Skiera, 2006).

Another important finding is the occurrence of an “insurance effect”. This effect explains that some consumers try to avoid uncertainty about future payments. Therefore they pick a tariff, whose allowance is actually far too high or even unlimited. In this way they prevent themselves from an unexpectedly high bill at the end of the month, since they already know the fixed amount they will have to pay (Miravette, 2002; Lambrecht and Skiera, 2006).

Further research also focuses on other motives like the desire for self-disciplination or flexibility as well as striving for convenience (e.g. Wertenbroch, 1998; Schulze and Gedenk, 2005). However, empirical tests have shown that these effects only have a relatively small impact on the overall tariff choice.

Most of these effects are based on Thaler’s (1980; 1985) mental accounting theory. According to this theory consumers have mental accounts for each transaction on which they mentally track their efforts and utilities. Hence, an account for a tariff choice remains open until the payment for the transaction is in balance with a certain received utility. As long as the mental account stays open, the consumer feels a certain pressure to utilize the service already paid because he does not want to appear wasteful. This effect is known as the “sunk-cost effect” which says that individuals have a tendency to continue an endeavour once an investment in time or money has been made (Arkes and Blumer, 1985). Gourville and Soman (1998) extend the basic model of mental accounting by implementing a mechanism for payment depreciation. It explains why consumers tend to forget about a payment over time, ultimately leading to the feeling of free usage.

Research Question

As mentioned above research on the measurement of tariff-choice biases has been conducted in the past (e.g. Train, McFadden and Ben-Akiva, 1987; Nunes, 2000; Lambrecht and Skiera, 2006). All of these studies basically follow the same research methodology. While Nunes (2000) uses a scenario technique, Train et al. (1987) and Lambrecht and Skiera (2006) use a combination of usage and real world transaction data for their measurement. In all these studies participants were asked to answer a questionnaire, which puts its focus on the motives why a certain tariff is chosen. By doing this, the researchers derived a measure for the overestimation effect, insurance effect and taximeter effect. Subsequently the actual usage data of the same consumers was examined in order to measure if the chosen tariff fits to their individual usage intensity. Hence, the actual usage is compared with the usage offered by the chosen tariff. If the allowance of the tariff were higher than the actual usage the consumers would have been better off by picking a smaller tariff. In this case the user is identified to having a “flat-rate bias”. If there was a consumer whose allowance in the tariff is smaller than its usage he would have been better off with a larger tariff. Hence this consumer would be classified to have a “pay-per-use” bias. This widely used method for measuring a tariff-choice bias assumes that the consumption behaviour is constant over time. However, this assumption does

not seem to be appropriate since consumer behaviour can likely vary. In order to illustrate this phenomenon, possible decision opportunities a consumer has to consider when choosing or using a certain tariff will be deducted theoretically as illustrated in Figure 1.

Let us assume that there are two consumers (C_1 and C_2) with different usage intensities of a certain service. We furthermore assume that these consumers have to make a tariff choice for a consumable service like telecommunication. They have to decide between two tariffs (T_1 and T_2) at a certain point in time t_1 and show an actual usage of this service measured at the point in time t_2 . The two tariffs are different regarding their allowance. The first tariff T_1 has a fairly high allowance so that from a microeconomic perspective this tariff is the better decision if usage intensity is higher than a certain break even amount x .

If his usage level was lower than x the consumer would be better off with choosing tariff T_2 . Figure 1 shows that consumer C_1 has a usage intensity which is above the critical level x . Hence, T_1 would be the preferable choice. On the other hand C_2 has a usage level below break-even point x . This leads to an optimal tariff being T_2 .

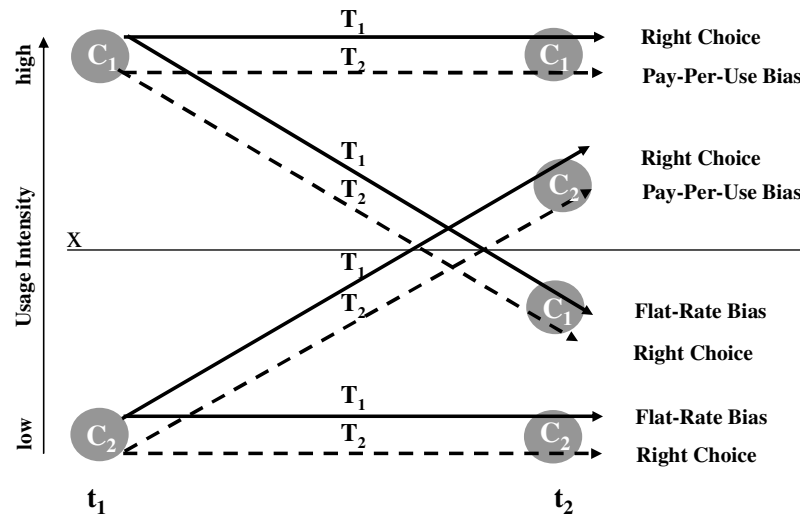


Figure 1

Yet, consumers are free in their choice so that they can pick the tariff they prefer. For the moment we assume that the usage intensity for both consumers remains constant in t_1 as well as in t_2 . Let's now assume C_1 would pick tariff T_2 . When the actual usage intensity in t_2 is analysed it becomes obvious that this consumer loses some of his surplus by choosing a tariff in which the allowance is too low. Hence, we would consider him to have a "pay-per-use bias". Very much in the same way C_2 could pick T_1 instead of T_2 . In this case we would consider C_2 having a "flat-rate bias".

However, these findings only hold true under the assumption that the consumer has not changed his past consumption behaviour. In t_1 it would be the right decision for C_2 to pick the second tariff T_2 . However, if he chooses T_1 instead and moreover increases his usage intensity, he would be classified to be in the right tariff. This is interesting, since he made a wrong decision in the first place. This effect automatically leads to a wrong measure of people with a flat-rate or pay-per-use bias since they are likely underestimated.

The occurrence of these effects is not unlikely in reality. Just think about a consumer who makes a certain number of calls using his current phone contract where he pays per minute. Now, imagine the same consumer changing his tariff to a flat-fee contract. Wouldn't he make more calls just because he already paid for it and now the service is "for free"?

The questions that arise are:

1. What determines the tariff choice of the consumers?
2. How does the chosen tariff impact the usage intensity of a service?
3. What are the reasons for a consumer to change his usage intensity?

In order to investigate these research questions an explorative study was conducted. The aim of this study was to gain a first understanding if and how tariffs influence our consumption behaviour.

Empirical Study

In our study we measured the joint effect of the tariff choice and the later consumption behaviour. The sample used for this study where 105 business students enrolled in master classes at a major university.

In order to model the setting, a scenario approach was used. In the scenario the participants were told to imagine deciding on a new tariff for a mobile email service on their cell-phones. In order to prevent the participants to answer according to personal experiences they were told that the actual usage rate in the past was 120 email recalls on average per month. Now, they had to decide whether they would prefer a flat rate for 12€ or a pay-per-use tariff with 10ct for each recall. The setting should lead to an indifferent decision since the payment for the usage would be 12€ in both tariffs. Following the microeconomic prescription the distribution of consumers who choose the flat-rate and the pay-per-use tariff should be distributed with 50% each.

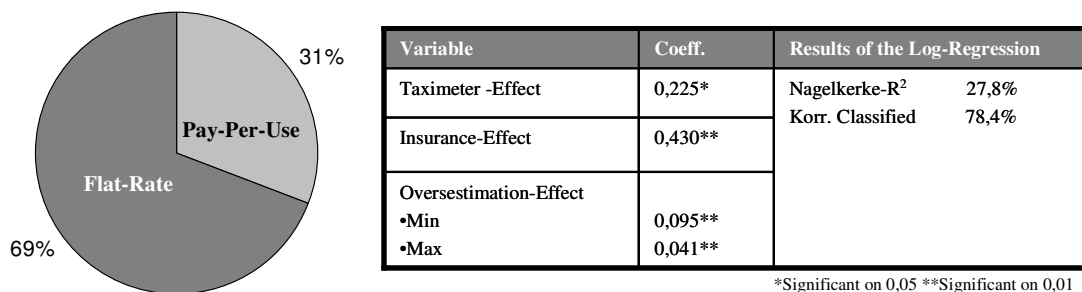


Figure 2

However, as illustrated in Figure 2, one can see that the large proportion of consumers prefer the flat-rate over the pay-per-use tariff. We also tested the overestimation, insurance and taximeter-effect and found a significant impact of each of the three effects on the tariff choice by using a logistic regression model. These findings are in line with prior findings by Train, McFadden and Ben-Akiva (1987), Nunes (2000), Lambrecht and Skiera (2006), so we assume that the framing of our study was well chosen.

However, these results may only give some insight on the reasons why a consumer chooses a particular tariff. The question whether a consumer would change his usage intensity because of a tariff remains unanswered. Therefore in the next part of the questionnaire we asked the participants how likely it is that they will change their consumption behaviour according to their chosen tariff. Hence, we asked them how they evaluate their own behaviour by estimating the likelihood that they increase their consumption when choosing a flat rate or decrease consumption when choosing a pay-per-use tariff.

The results are illustrated in Figure 3. The diagram shows that the vast majority of the respondents believe that the tariff choice will impact their later consumption behaviour. 83% of the respondents assume that they will check their email less often if they decide in favour of a pay-per-use tariff. On the other hand 77% said that they would check their emails more often after choosing a flat-rate tariff.

If this behaviour is shown in reality, the ex-post measurement of the flat-rate bias based on actual usage data simply does not work. If the tariff choice and the actual consumption are compared ex-post, it is likely that a large proportion of consumers classified as having the right tariff, are only allocated to this group because their consumption pattern changed over time. Hence, the research method commonly applied underestimates the amount of consumers who actually have flat rate bias significantly.

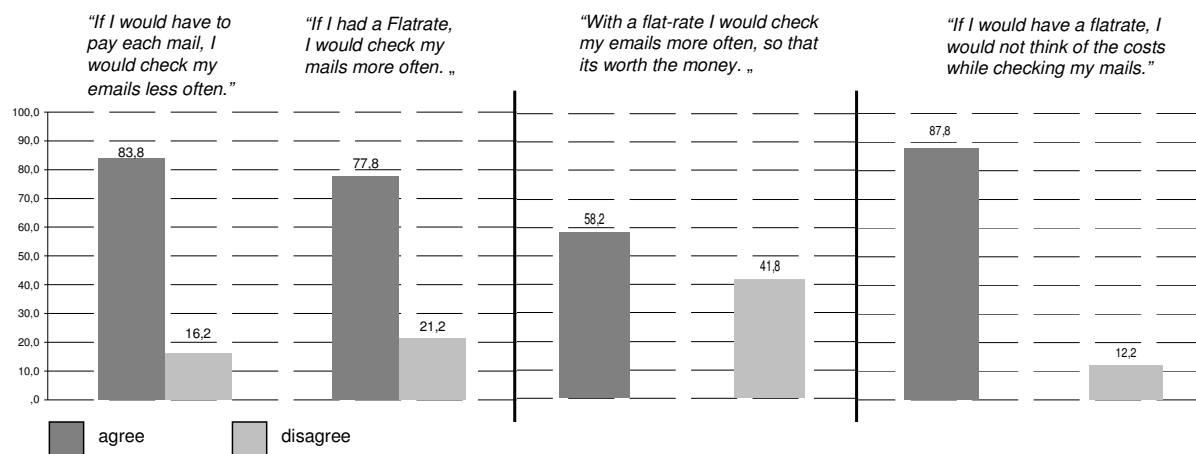


Figure 3

In order to get more insights concerning reasons why consumers change their behaviour we tried to identify reasons that lead to this phenomenon. First, we measured the willingness to utilize a service, which has already been paid for. We assumed that the “sunk-cost” pressure might have an impact on the later utilization of the service. The participants were asked whether they would use a flat-rate service more frequently because they already spend money for it. The results in Figure 3 show that for 58% of the participants the sunk-cost effect plays a role. Moreover we tried to find out whether the mental coupling of payment and usage might have a significant impact on the utilization of the service. To answer that question we asked the participants if they consider the costs while checking their mail. The result shows that in a flat-rate tariff 83% of the participants do not think about costs while utilizing the service. That indicates that there is a smaller degree of mental coupling for flat-rate tariffs than for pay-per-use tariffs.

Outlook and Limitations

The impact of tariff choices is a highly tempting topic for researchers and practitioners alike. Especially service companies are interested in forecasting the impact of changes in their tariff structure. Therefore it is not surprising that there was already research conducted in the past in order to understand why consumers choose a certain tariff. It was derived from previous research projects that consumers do not always choose a tariff that maximizes their economic utility. Instead, many consumers have a preference to pick a certain tariff. However, our research shows that there are some shortcomings in the today common way to measure tariff choice biases. The assumption that the consumer’s utilization behaviour is consistent over time does not meet real world findings like an increased usage of telecommunication services after choosing a flat-rate tariff. Therefore we propose measuring the impact of the tariff itself on the later consumption. However, this study is of explorative nature and leaves room for

further investigation. The next step will be to derive and test hypotheses with a larger sample size. In our study we used a fairly small student sample with a scenario technique. For further research we will look at real world transaction data with a special focus on the changes in usage intensity.

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