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**Who errs in switching to an overall flat rate for mobile communication services?  
An empirical analysis of predictors of the degree of tariff misfit among customers  
in Germany**

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# Abstract

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## Who errs in switching to an overall flat rate for mobile communication services? An empirical analysis of predictors of the degree of tariff misfit among customers in Germany

Worldwide, more and more users of mobile communication services (MCS) are in tariffs which decouple the level of customer usage of one or several MCS (voice calls, Internet access, SMS) from the fixed monthly charge of mobile network operators (MNOs). However, consumers may err in their choice of such a flat rate because other usage-dependent price schemes are available which more closely match with their MCS use patterns. Surprisingly, little research has examined how the degree of consumer tariff misfit is correlated with socio-demographic, contract-, MCS-usage- and device-related subscriber characteristics. The present paper analyzes such associations. We develop two volume-based measures of the degree of tariff misfit in a sample of 1,274 subscribers of an MNO in Germany who had switched into a “grand flat rate” which includes unlimited national call minutes, mobile Internet traffic as well as national SMS. We find that the degree of tariff misfit is significantly higher among subscribers who are older, live in West Germany, have a longer MNO tenure, have larger monthly usage volume variations of voice calls, mobile Inter-

net and SMS and are equipped with a device which is not an Apple iPhone. Implications of the results are discussed for MNO practitioners and for future scholarly work.



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# 1. Introduction

Over the last 25 years, the way of how mobile network operators (MNOs) provide and price service offerings for postpaid subscribers has changed fundamentally. During the initial roll-out phase of mobile communication services (MCS) in the early 1990s, MNOs predominantly sold their two core services, mobile voice calling and SMS, under separate tariffs. For mobile voice, two-part tariffs with a regular, typically monthly access price and a usage price for every unit of consumption (second or minute) were the prevailing sales model. At the turn of the millennium, service providers detected that tariffs offering unlimited usage for a fixed price ("flat rates") were attractive both from a seller and a buyer perspective. For sellers, flat rates make revenue planning easier because they decouple revenues from varying usage levels of their subscribers. For buyers, flat schemes avoid "taximeter feelings" which reduce the joy of using MCS (Lambrecht & Skiera, 2006) and "bill shocks" resulting from an underestimation of usage levels and fees (Grubb, 2015a). Most recently, MNOs have started to expand the flat rate notion: While the first use-independent tariffs were limited to just one service (e.g., SMS), more recent variants cover several established and innovative services, mostly mobile voice, Internet access and SMS.

In theory, customers should select the MCS rate plan which minimizes the average price they pay for each consumed unit. However, there is ample evidence suggesting that in practice, mobile subscribers often fail to choose the best tariff and frequently opt for a flat rate although they would be better off with a use-dependent scheme (e.g., Lambrecht & Skiera, 2006; Lunn, 2013; Gerpott, 2007; Grubb, 2015b, 2015c; Friesen & Earl, 2015). Reasons for false choices include an overestimation

of future consumption and insufficient search for rate plans which are suitable for a user's communication behaviors (Grubb, 2015b, 2015c).

At first sight, it seems that a misfit between subscribers' rate plan choices and their usage behaviors is unproblematic from an MNO perspective. In the short run wrong tariff choices contribute to higher MNO revenues compared to a situation in which consumers would select a tariff minimizing their cash outlays. However, there is evidence suggesting that mobile subscribers in a tariff which does not match their communication behaviors are less satisfied than their counterparts for whom the degree of tariff misfit is low (Gerpott, 2011; Sudheesh, Chand, & Subramani, 2015). Furthermore, for mobile voice services, several studies indicate that MNO customers who had chosen a price plan which did not minimize the monthly charges for their usage profile were significantly more likely to switch to another MNO than those individuals who were in a scheme which fitted best with their call patterns (Iyengar, Ansari, & Gupta, 2007; Iyengar, Jedidi, Essegai, & Danaher, 2011; Joo, Jun, & Kim, 2002; Wong, 2010a, 2010b, 2011). Hence, in the long run and perhaps even in the medium term, it is likely to be more profitable for MNO to take measures which aim at limiting the number of their subscribers whose degree of misfit between their rate plan and their service consumption behaviors is high.

Prior research on wrong tariff choices of (mobile) communication customers has strongly focused on quantifying the financial losses which accrue to consumers due to being in suboptimal rate plans (Ascarza, Iyengar, & Schleicher, 2016; Ater & Landsmann, 2016; Bar-Gill & Stone, 2012; Faqolli & Tole, 2013; Genakos, Roumanias,

& Valletti, 2016; Grubb, 2009; Grubb & Osborne, 2015; Grzybowski & Liang, 2015; Joo et al., 2002; Köhler, Krämer, & Krüger, 2014; Leider & Şahin, 2014; Miao & Jayakar, 2014; Miravete, 2003; Miravete & Palacios-Huerta, 2014; Narayanan, Chintagunta, & Miravete, 2007; Telegraph, 2015; Wong, 2010b, 2012; Wu, Lin, Lin, Wang, Lin, & Hu, 2015). A second stream of research has explored objective reasons (e.g., rate plan complexity or switching costs) and subjective causes (e.g., flat rate or flexibility preferences) of financially suboptimal (mobile) communication rate plan choices of consumers (e.g., Friesen & Earl, 2015; Gerpott, 2007, 2009; Goettler & Clay, 2011; Hämmäinen, Verkasalo, & Kumar, 2009; Harada, Urdan, & Hertas, 2015; Haucap & Heimeshoff, 2011; Heidenreich & Talke, 2012; Iyengar, Ansari, & Gupta, 2007; Krämer & Wiewiorra, 2012; Lambrecht, Seim, & Skiera, 2007; Lambrecht & Skiera, 2006; Mitomo, Otsuka, & Nakaba, 2009; Train, McFadden, & Ben-Akiva, 1987; Uhrich, Schuhmann, & Wagenheim, 2013; Wolk & Skiera, 2010). A third line of work has discussed measures such as the provision of information on rate plan attributes and costs at the point of sale before consumers select a rate plan or on use patterns after consumers have opted for a tariff scheme which aim at reducing the share of consumers with a high degree of tariff misfit (e.g., Ascarza et al., 2016; Bar-Gill & Stone, 2012; Friesen & Earl, 2015; Redden & Hoch, 2011; Zihagh, Ratchford, & Rasouli, 2015).

Surprisingly, with the exception of Miao and Jayakar (2014) and Miravete (2003), prior studies did not explore how consumers with a higher degree of tariff misfit differ from their counterparts who are in the right rate plan in terms of socio-demographic, contract- and device-related characteristics. This research gap is unsatisfactory both from a practical and a

theoretical standpoint. For practitioners, knowledge concerning the typical profile of subscribers whose tariff type is at odds with their service use patterns may support them in fine-tuning programs seeking to avoid or reduce wrong tariff choices to specific target groups in their customer base. For instance, if customers who get a new smartphone are prone to switch to a flat rate, although this scheme fits badly with their (limited) use intensity of MCS, MNO managers could make sure that their offline sales staff and their online sales channels refrain from pushing customers who want a new device to combine their equipment update with a move to a flat

scheme. From a theoretical perspective, evidence with regard to variables discriminating between subscribers with a high and a low degree of tariff misfit is also of considerable value: It can support theorists in better understanding circumstances under which consumers fail to make (economically) rational rate scheme choices.

Against this background, the purpose of the present investigation is to empirically explore the extent to which socio-demographic, MCS-usage-, contract- and device-related characteristics of postpaid MNO subscribers are suited to predict the

degree of tariff (mis)fit among customers who recently switched to a flat rate. The analysis is based on objectively recorded data of a sample of 1,274 subscribers of the German subsidiary of a multinational MNO.

The remainder of this article is divided into four parts. The next section reviews the literature to derive the study hypotheses. Section 3 describes the empirical methods and section 4 reports the empirical results. The final section discusses implications of our findings for management practice and future research.