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Regulated termination rates and competition among Tunisian mobile network operators. *Barriers, bias, and incentives*

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ABSTRACT

Since 2006, the Tunisian National Regulatory Authority has been imposing multiannual mobile-to-mobile termination rates, first on the duopoly of *Tunisie Télécom* and *Tunisiana*, and then on all three providers once *Orange Tunisie* entered the market in 2010. This research studies the interplay between interconnection rates for mobile call termination and the retail price competition for prepaid SIM cards, predominantly chosen by Tunisian consumers. We show that the duopoly was practicing "price alignment" for off-net calls, and that subsequently, the third provider entering the market sparked a decisive initial price drop associated with the non-reciprocal rate it enjoyed. However, the price war, which benefited consumers, only occurred when the Regulatory Body eliminated differential tariffs between on and off-net calls in the retail market. It follows that, everything else being equal, an interconnection rate drop alone will not lead to a decrease in retail prices.

1. Introduction

The telecommunications sector is a network industry characterized by high fixed costs and low marginal costs, and the preservation of an efficient mix of market sustainability both for providers and consumers; as such, it has extensive regulatory issues. Providers "meet" in the market where calls terminate, considered an interconnection node (among others interconnection nodes such as co-location, facility sharing sites, etc.), but also an *economic* one. We consider this wholesale market in the Tunisian mobile phone industry through mid-2016, reviewing the changes caused by liberalization.

Our study researches the interplay between the wholesale mobile-to-mobile termination rates (MMTRs) and the per-minute retail prices of prepaid voice calls. Indeed, the main object of this study is the regulated MMTRs with no cap regulation (retail price regulation) in Tunisia, regardless of the data transiting through the 3G technology. We consider the demarcation bounds in the Tunisian case a relevant market to evaluate the degree of competition among mobile network operators (MNOs) in order to carefully examine retail pricing offers. We consider only the voice services of the incumbent's mobile network, and similar services offered by its competitors, independently of their fixed networks, even if the *waterbed effect* (Genakos & Valletti, 2011, 2015) could (exist and) modulate the strategies of these companies. Those restrictions could introduce some distortions in this study given that the incoming and outgoing calls on the fixed networks are inseparable in competitive market strategies.

The seminal works of Armstrong (1998) and Laffont, Rey, and Tirole (1998a, 1998b) analyzing high termination fees as leverage to increase market power, which can evolve to retail price collusion, have been taken into consideration by regulators for their potential anti-competitive implications (Baranes, Benzoni, & Hung Vuong, 2011; European Parliament & European Council, 2002; European Regulatory Group, 2008; Kongaut & Bohlin, 2014).

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Subsequently, regulatory bodies have requested the supervision of termination rates under the calling-party-pays principle (CPPP), and mandated implementation, in a transitory period, of non-reciprocal termination fees between mobile operators (Carter & Wright, 2003).

This is the case in Tunisia. The *Instance Nationale des Télécommunications* (INT), the Tunisian National Regulatory Authority of the telecommunications sector, ensures that the operators do not infringe on competition rules and safeguards, through several instruments, and among other duties, has been setting the MMTRs since 2006.

The paper is structured as follows. Section 1 is an overview of the telecommunication sector in Tunisia. Section 2 studies the evolution of the mobile market. Section 3 considers the soft regulation of the MMTR, mutually negotiated by the duopoly without INT guidelines. Section 4 expounds on the regulations of the duopoly with the MMTR imposed by the INT. Section 5 examines price competition while the third provider enjoys a better MMTR, and Section 6 reports on the implications of the strict directives on equalization of the off-net and on-net retail prices (off-net: calls terminating on another network and on-net: calls within the operator's network) decreed by the regulatory body. Finally, Section 7 introduces concluding remarks for further analysis.

2. Overview of Tunisian liberalization in the mobile network market

The liberalization of communication services in Tunisia (Boughzala, 2005; Mezouaghi, 2005; Van Assche & Konan, 2004) has evolved over several stages, beginning as a monopoly market and moving to competition between three providers. It began when the incumbent, government owned company *Tunisie Télécom* (TT), started operations in 1996 and converted to a joint-stock company, after the separation of the telecommunications services from the Postal, Telegraph & Telephone (PTT) administration. Two years later, TT launched, through its subsidiary Tunicell, a 2G mobile phone service.

The effective date of the Tunisia legal and regulatory framework was 2001. The INT, the Tunisian regulatory body, was established even though the market was still a monopoly, in order to set guidelines, directives and rules to safeguard competition when the market was liberalized. The newly-adopted fundamental Telecom Code (2001) authorized the licensing of private providers, and on May 11, 2002, a new concession purchased for TND[1] 680 million (about US$ 470 million) was granted to *Orascom Télécom Tunisie*, a consortium of Kuwaiti and Egyptian private interests. The new company, operating under the brand name *Tunisiana*, was bought by *Qatar Telecom* (*Qtel*) and rebranded *Ooredoo Tunisie*.[2] Presently, *Qtel* holds 90% of *Ooredoo* shares, while the Tunisian State holds the remaining 10% through its subsidiary *Telecom Zitouna*.

The sector's liberalization process continued in 2004 when the *Telecom Code* compelled the conversion of the incumbent into a limited public company, subject to trade legislation. This meant that the state-owned enterprise TT became open to private participation, and in April 2007, the Emirate telecommunications company, *Tecom DIG*, took a 35% stake in it.

At the same time, the *Telecom Code* allowed all telecommunications providers to access the nationwide “backbone” network (pairs of copper wires and fiber optic) managed by the incumbent TT.

For more than seven years, the mobile market was a duopoly, regulated by the INT. As TT anticipated the end of that era, in 2009, it launched a subsidiary, *Elissa*, a mobile virtual network operator (MVNO), targeting young consumers. The mobile phone market became more competitive with the entry of *Orange Tunisie* in 2010, a third mobile provider (formerly *Divona* owned by *Monaco Telecom* and *Planet Tunisia*). After multiple financial arrangements, *France Telecom/Orange* secured a 49% stake in *Orange Tunisie* and the Tunisian State became the controlling shareholder with 51% of the capital after incorporating the ownership of *Planet*'s securities. Thus, *Orange Tunisie* launched Tunisia's first commercial 3G mobile service, followed by TT in 2011, and Ooredoo in 2012.

Although, *Ooredoo* and *Orange* were licensed as fixed-line operators, having launched the DSL and Fiber-to-the-Premises (FttP) service, the strategic fixed phone segment remained a *de facto* monopoly by TT.

According the World Bank Report (2014, p. 8), as part of the international high-speed fiber optic networks handling traffic to and from Internet service providers and end-users, TT and its rivals sold international voice traffic at the highest prices.

In October 2015, the telecom market opened to *LycaMobile*, an international MVNO; this represented the full maturity of the Tunisian mobile phone sector. *LycaMobile*, a UK-based company, is present in 19 countries, and in Tunisia, it uses TT's network capacity to enable its commercialization of international calls at low prices.

In March 2016, the Tunisian State granted concessions to TT, Ooredoo, and Orange for 4G licenses based on very close financial bids, TND 155 million, 160 million and 156.3 million, respectively (ranging from approximately 76 to 78 million US$). The three providers launched commercial LTE services (4G) in mid-2016.

3. Mobile phone penetration and *ex-ante* regulation

In a population slightly larger than 11 million inhabitants with a median age around 31, the total number of mobile phone subscriptions reached more than 14.5 million units at the end of 2015 (Fig. 1).

3.1. Prevalence of prepaid SIM cards

According to the GSMA report (2016, pp. 17–18), *unique subscribers*, referred to as users of mobile services, are about 6.6 million

[1] The exchange rate TND/US $ slid continuously between 2002 and 2016 from approximately 0.68 to 0.49.

[2] In April 2014, Tunisiana became Ooredoo and hereinafter, we will retrospectively quote Ooredoo instead of Tunisiana.