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Was household internet adoption driven by the reform? Evaluation of the 2013 telecommunication reform in Mexico

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ABSTRACT

In 2013 the Mexican Telecommunications and Broadcasting Reform was launched with the goal of promoting competition and access in the telecommunications sector. The aim of this paper is to evaluate whether the 2013 reform had an impact on household fixed internet adoption and to what extent Mexican households, classified into ten wealth groups, had adopted internet. For the assessment, after a revision of supply and demand Reform's measures to reduce the digital divide, data from the 2010 Census and 2015 Intercensal Survey were used to create adoption indexes using Poisson estimations. The results were analyzed by ten wealth groups, constructed on principal components based on household characteristics (type of dwelling, electricity availability, availability of drinking water, sewer system, internet and ICT devices: computer, telephone, cell phone and internet). Additionally, the impact of both indexes was validated by a difference in differences method. The results suggest a 66% overall increase in internet adoption between 2010 and 2015. The decile analysis showed considerable internet adoption in the low and middle wealth groups (deciles 2–8), while in the highest wealth groups (deciles 9–10) the impact of internet adoption has been relatively moderate. It is worth noting that internet adoption is unequally distributed, as less than 1% of households in deciles 1 to 6 had adopted internet in 2015, while nearly all of the wealthiest ten percent of households have internet access. Nevertheless the increment in internet adoption was not only the result of the reform but the combination of the broadband penetration trend and the reform together.

1. Introduction

Developing countries face a major challenge of digital inclusion. The problem is even greater if the telecommunication market has to cope with regulatory failures, combined with challenging geography and extremely variable population densities. This is the case of Mexico, situated in 51st place in the most recent global competitiveness index, but 71st in the 9th pillar, technological readiness ([World Economic Forum, 2017](#)). Despite having leapt forward in recent years, Mexico is far below Chile, the Latin American leader, which is in 38th place in the technological readiness pillar. The WEF report notes Mexico's most significant problems in technological readiness: adoption and use of information technologies by the general population.

In the recent past, Mexico's urgent need for regulatory changes in the telecommunications sector has been pointed out repeatedly ([Aceves, 2013](#); [Noll, 2013](#); [OECD, 2012](#); [Ten Kate, 2014](#)). The Mexican telecommunications market has been characterized by high

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concentration, which results in low levels of competition, as well as a lack of facilities and low broadband penetration rates. This was the state of the market when the 2013 Telecommunications and Broadcasting Reform (the Reform) was enacted (SEGOB., 2013). Access to information and communications technologies (ICT) was recognized as a fundamental right by means of a constitutional amendment. Additionally, in the same year, the National Regulatory Authority, Comisión Federal de Telecomunicaciones (COFETEL for its acronym in Spanish), was replaced by a new agency, the Instituto Federal de Telecomunicaciones (IFT for its acronym in Spanish). The new autonomous regulator is in charge of promoting competition and ICT access. Thus far, international agencies (OECD., 2017b) and scholars (Ayala, Chapa, García, & Hibert, 2017; Cave, Martin, Mariscal, 2017; Gamboa, 2017) have examined certain policy decisions by the IFT, such as the creation of the figure of preponderance (a significant market power operator), and imposition of asymmetrical regulation.

On the demand side, the Mexican ICT market possesses certain socio-economic characteristics that may serve as barriers to the adoption of internet, such as high poverty rates and unequal access to social services in terms of education, healthcare, housing and culture (CONEVAL., 2016a). In this regard, it may be noted that according to data from the National Survey on the Availability and Use of Information Technologies in Households (INEGI, 2016b),¹ the main reasons by far for not adopting internet are the lack of economic resources (55.2%). 16.3% of the respondents reported “other” (none of the reasons listed in the questionnaire) as the main reason for not adopting internet access services, followed in third place by lack of internet access services (15.7%) and lack of digital literacy skills (10.8%). Not having an internet-capable device was reported by only 2%. These results are consistent with a previous assessment in Mexico, where poverty is identified as the main reason for technological exclusion (Casanueva-Reguart & Pita, 2010). Unfortunately, the Reform has only been centered on the supply side, as it has not been complemented by digital skills programs (Mecinas, 2016).

Given these facts, and as the impact of the Reform on household fixed internet adoption remains unexplored, the aim of this paper is to evaluate whether the 2013 Telecommunications and Broadcasting Reform had an impact on household internet adoption, and to what extent Mexican households, classified into ten wealth groups, have adopted internet. For the assessment, data from the 2010 Census and 2015 Intercensal Survey are used to create adoption indexes through Poisson estimations. Both census surveys provide detailed information on *household income*, household condition and assets (such as *type of dwelling*, *electricity availability*, *availability of drinking water and sewer system*, *internet and ICT device availability*). As household assets provide a significant contribution to explaining welfare (Torche & Spilerman, 2009), internet adoption is analyzed by constructing ten wealth groups using principal components. Additionally, the impact of both indexes is validated by a difference in differences method.

The paper is structured as follows. Section 2 describes the telecommunication industry in Mexico. It is divided into three sub-sections; 2.1 explains the Reform, 2.2 describes the evolution of the market, 2.3 presents a compilation of government and private entity digital inclusion programs and 2.4 highlights notable academic works about the Reform. Section 3 presents the methodology, beginning with the research framework. In Section 4 the results are explained and discussed. In Section 5, the main conclusions are presented.

2. The telecommunications industry in Mexico

2.1. The telecommunications reform

In 1990 the Mexican state telephone company was privatized, and Carlos Slim's Grupo Carso bought 51% of its shares. In the following year the group gained total control of the company. For seven years it held a monopoly on long distance and domestic telecommunications in Mexico. It was not until 1995 that the Federal Telecommunications Law was established to provide a regulatory structure to the recently liberalized Mexican telecommunications market (Aceves, 2013). It is important to note that in 1993 the Foreign Investment Act permitted foreign investment up to 49% (Álvarez, 2014). The National Regulatory Agency (NRA), the COFETEL, was created in 1996, with very limited power (Noll, 2013; Suarez, 2016). This limitation is reflected in the fact that the incumbent telecommunications operators took advantage of appeals as a way of delaying their compliance with NRA resolutions. They filed objections against COFETEL decisions to engage in anti-competitive practices, delaying interconnection and access to prevent the entry of new players (Alvarez, 2006). The regulatory agency did not have economic independence either, as it was dependent for its budget on the Ministry of Communications and Transportation.

The document entitled ‘Pact for Mexico,’ published in 2012, one day after Peña Nieto was inaugurated as president, set the first precedent for the telecommunications reforms initiated shortly afterwards, in 2013. The Telecommunications Reform aimed to extend the benefits of competitive markets to the Mexican telecommunications sector, which had long suffered from a quasi-monopoly market structure, as well as to ensure equitable access to telecommunication services (PactoporMéxico, 2012).

On June 11, 2013, the Diario Oficial de la Federación (DOF for its acronym in Spanish), the federal institution responsible in Mexico for publishing up-to-date information on reforms and modifications to laws and regulations, as well as new laws and regulations, announced the reforms (additions) to the Constitution in the field of telecommunications. The decree established that the State would guarantee or promote that provision of services be carried out under conditions of competition, quality, plurality, universal coverage, interconnection, convergence, and continuity, and without arbitrary interference. The reform included, among

¹ The Instituto Nacional de Estadística y Geografía (INEGI for its acronym in Spanish) is the National Agency who regulates and coordinates the National System of Statistical and Geographical Information in Mexico. The INEGI is the Agency who performs: national census and prepare national indexes and others statistical projects.

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