BROADBAND DEPLOYMENT IN MEXICO: POSSIBLE EFFECTS OF LOCAL LOOP UNBUNDLING

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ABSTRACT

Mexico is one of the few OECD countries where local loop unbundling has not been regulated. Local loop unbundling (LLU) was one policy promoted during the 1990's by several administrations in order to foster competition in the local loop. However, after observing the consequences of local loop unbundling in several countries, it is still not clear whether this policy could be beneficial or not. In this paper we discuss possible consequences of unbundling the local loop in Mexico.

Keywords: local loop unbundling, Mexico

1. Introduction

Unlike developed countries, where universal access to telecommunication services has been already achieved, there exist many countries in which telecom development must take into consideration at least two different and sometimes conflicting development objectives. On the one hand, since there are still many underserved areas, particularly in rural environments, there is the need of policy instruments, which focus on promoting access to the most basic services, like voice services. But on the other hand, there is the need to design correct regulatory instruments, with the goal of promoting broadband (BB) connectivity, for different segments of the society. BB access has evolved to become an indispensable tool for an ever increasing range of business as well as of private activities. It can be seen as a prerequisite for new services and applications, which are becoming an integral part of everyday life: it is easy to identify the impressive growth and impact of e-commerce, tele-education, tele-medicine, e-government and e-democracy, among other equally important areas. For many countries, the concept of universal access has been broadened, and it now includes access to broadband

services. As a consequence, questions related to the access to broadband services have become an issue with strong economic, political and social effects.

Local loop unbundling is apparently an interesting alternative to facilities-based entry of new competitors, and it has traditionally been considered as a reasonable road towards consolidation of competition in a liberalized telecommunications environment. But in addition to promoting competition, the following must be mentioned to be among the original objectives of LLU: to broaden the service offering to consumers without forcing the new entrants to make large investments in infrastructure expansion, and to avoid unnecessary replications of infrastructure. There exist many examples, in which LLU has not proven to be an exciting alternative for voice services, but LLU has been reasonably successful when offering broadband access to new telecom services (particularly access to Internet).

Delays in consolidating or even in starting actions which could lead to LLU have been originated by either a lack of a more decided intervention of the regulatory agencies (RA), or to excessive power or influence of the former monopolist, who very frequently refuses to unbundle its local loop on a voluntary basis. It is quite normal that a regulatory mandate is required before local loops are unbundled. Regulatory intervention is also required for the determination of tariffs and prices to be applied to unbundled elements.

Several RA have determined in the past, that imposing LLU obligations on the incumbents would promote BB deployment and strengthen competition. However, after some years of experience with this type of policies, there are still contradictory results, and thus, it is not clear whether unbundling lives up to the expectations of the RA or not. As a matter of fact, a quite active debate has recently been going on, regarding the possible impact of local loop unbundling on the deployment of broadband access infrastructure.

For example, Garcia-Murillo presents a study in [5], in which it is argued that a “substantial improvement in BB deployment” can only be identified to be a consequence of unbundling the incumbent’s infrastructure, in countries with incomes characterized as middle-income, but not in high-income nations. Other variables that can positively influence this deployment are a country’s wealth (GDP), population and competition level, price of the services and number of dial-up Internet users. Another contribution [7] describes the case of U.S. broadband policy, where there exists uncertainty about the motivations of incumbent operators to invest in new network upgrades if there is unbundling. De Bijl and Peitz analyze in [6] the case of several European countries and they come to the conclusion that there are still several open questions in order to understand in detail the possible impact of unbundling the local loop. The case of Japan is discussed in [4], where the author proposes to revise the pricing policy of unbundled services, in order for the incumbent to make a reasonable profit.

Mexico, like every other country in the world, regardless of its classification according to its income, has very particular characteristics, and the design of regulatory instruments must take these peculiarities as a starting point. In this paper we discuss possible consequences of unbundling the local loop in Mexico. In Section 2 we present a snapshot of telecommunications infrastructure in Mexico, where broadband access is currently provided basically by means of ADSL and CATV networks. Other recent technological alternatives for promoting broadband growth and use are also presented and discussed in this section. Section 3 discusses scenarios about its possible future evolution. The first scenario assumes that no action is taken at all, and we describe the possible near term impact in the context of the

current regulatory framework. The second scenario discusses the possible effect of implementing an unbundling requirement. Finally, Section 4 concludes the paper.

2. A Snapshot of Broadband Accesses and Unbundling in Mexico

2.1 The Regulatory Framework

Until the beginning of 2006 the Mexican telecommunications industry had been regulated by the Federal Telecommunications Law (FTL), which came into effect in 1995 in an effort to modernize the sector, by promoting its efficient development in a competition oriented environment, having clearly defined social goals. Since its enactment, the idea had been to have telecommunication services offered in healthy competition between large numbers of telephone (local as well as long distance), cable television and VA services providers. Cellular services are offered by 9 regional operators, competing with a nation-wide operator (a subsidiary of the former monopolist, Telmex). Simultaneously with the enacting of this Law, a regulatory agency was created and started its operations (Comisión Federal de Telecomunicaciones-COFETEL).

However, after more than 10 years of being the guideline of this industry, several shortcomings of this Law have been identified, and there existed the need to maintain its alignment with this highly dynamic industry. Among these shortcomings, the following can be mentioned: the lack of effective provisions to reduce the market power of the established operator (Telmex), there are not clearly defined mechanisms for reaching universal access, it has no provisions for promoting deployment of new services without large investments (such as a policy for unbundling of the local loop), and a lack of provisions for regulating a convergent industry, in which the borderlines of telecommunications, broadcasting and television, have been blurred.

In an effort to update the Law, to respond to new technological developments, and to level the ground for the so-called convergence, on April 2006 the Mexican Congress enacted modifications to the existing laws (telecommunications as well as radio and TV laws). The new framework includes under its jurisdiction not only traditional telecommunications networks and services, but also aspects related to broadcasting media (so far, these had been regulated by a separate Radio and Television Law, enacted in the 60´s)[1]. Moreover, the new law also considers significant modifications to the operation and the structure of COFETEL.

The relevant aspects of this new regulatory framework are summarized in the following. The structure for COFETEL is modified, having now 5 commissioners, instead of the 4 it previously had, and the President of the nation makes their 8-year long appointments. The commissioners themselves elect the president of the Commission. As of this writing, the commissioners are in the process of being nominated, and new operating rules for the Commission have to be designed. The new Commission has under its jurisdiction all aspects related to broadcasting and television (excluding aspects related to contents), which previously had been under the responsibility of the Communications Ministry[2]. Unlike the way it had been done in the past, concessions (licenses) for the use of spectrum will be granted by COFETEL, using an auction procedure, and taking into consideration aspects such as business plans and financial stability of the bidders. The previously mentioned aspects,

[1] More than a new law, it is really a set of modifications to the existing Telecom Law and Radio and TV Law.
[2] SCT: Ministry for Communications and Transportation

such as unbundling, are not mentioned in the new framework. Thus, many of the mandates of the previous Law will still be in effect.

2.2 Evolution of Accesses [3]

The growth of the sector has been very healthy, as shown by the investments made during the last 5 years. During this period, according to [1], investments in telecommunications have been of the order of 15 billion USD. The number of fixed access lines has evolved during the last years as shown in Table 1. It must be noted that the first licenses for wireless access were granted in 1998. It is estimated that at the end of 2005, 59% of the households would have access to basic telecommunications services.

Table 1. Evolution of fixed access lines

	No of lines ($*10^3$)	Yearly change (%)
1999	**10,927**	**10.1**
2000	**12,332**	**12.9**
2001	**13,774**	**11.7**
2002	**14,975**	**8.7**
2003	**16,330**	**9.0**
2004	**18,073**	**10.7**
2005	**19,512**	**8.0**

During the same period, the numbers of subscribers of mobile cellular services has increased on a more dramatic way, as presented in Table 2 (>93% are currently prepaid users).

Table 2. Evolution of cellular subscribers

	No of lines ($*10^3$)	Yearly change (%)
1999	**7,732**	
2000	**14,078**	**82.1**
2001	**21,758**	**54.6**
2002	**25,928**	**19.2**
2003	**30,098**	**16.1**
2004	**38,451**	**27.8**
2005	**47,462**	**23.4**

The numbers of Internet users has evolved as shown in Table 3.

[3] source: COFETEL, www.cft.gob.mx

Table 3. Evolution of Internet users (e: estimated)

Year	Concept	Total	From home	From outside
2000/e	Total	**5 057 533**	2 568 783	2 488 750
	with computer at home	2 863 021	2 568 783	294 238
	without computer at home	2 194 512	n.a.	2 194 512
2001	Total	**7 047 172**	3 194 638	3 852 534
	with computer at home	4 094 680	3 194 638	900 042
	without computer at home	2 952 492	n.a.	2 952 492
2002	Total	**10 764 715**	3 934 434	6 830 281
	with computer at home	5 932 887	3 934 434	1 998 453
	without computer at home	4 831 828	n.a.	4 831 828
2003/e	Total	**12 218 830**	4 632 062	7 586 768
	with computer at home	6 920 910	4 632 062	2 288 848
	without computer at home	5 297 920	n.a.	5 297 920
2004/e	Total	**12 945 888**	4 985 418	7 960 470
	with computer at home	7 414 922	4 985 418	2 429 504
	without computer at home	5 530 966	n.a.	5 530 966
2004/e	Total	**14 036 475**	5 145 554	8 890 921
	with computer at home	7 968 153	5 145 554	2 822 599
	without computer at home	6 068 322	n.a.	6 068 322
2005/e	Total	**16 492 454**	5 235 018	11 257 436
	with computer at home	8 385 921	5 235 018	3 150 903
	without computer at home	8 106 533	n.a.	8 106 533
2005/e	Total	**18 622 509**	5 671 535	12 950 974
	with computer at home	9 294 737	5 671 535	3 623 202
	without computer at home	9 327 772	n.a.	9 327 772

Another interesting set of indicators for the analysis of the broadband access market is the numbers of Internet accesses, according to the technology, which is presented in Table 4.

Table 4. Evolution of Internet accesses, by technology

Technology	2000	2001	2002	2003	2004	2005
Dial Up	1,023,024	1,772,568	1,864,929	2,015,996	2,129,448	1,915,694
xDSL	0	5,300	78,120	213,494	695,050	1,149,058
Coax Cable	8,622	64,479	124,052	180,753	309,114	557,828
Other	103,341	41,291	29,314	34,131	33,291	32,128
Total	**1,134,987**	**1,883,638**	**2,096,415**	**2,444,374**	**3,166,903**	**3,654,708**

2.3 Alternative technologies for broadband access

Even though xDSL seems to be the technology of choice for broadband access, there exist other interesting alternatives, which are described below [2].

- Coaxial Cable: Several cable operators have deployed networks in several parts of the country. Even though during 2005 there was an important increase of the number of broadband accounts using this technology, cable operators face the problem that there is still no consolidation of the cable industry and, therefore, it is difficult to reach many parts of the country [3].

- Powerline Communications (PLC): Even though apparently there exists the political will to use this technology to provide telecommunications services, its deployment is still in a development and testing stage, and it still has to be aligned with the regulatory framework. It is still an open question whether or not this technology will be accepted by the users, what price levels will be, and consequently, whether or not it will capture significant number of users.

- Wireless LAN: There are a few wireless LAN (WiFi) hotspots in Mexico that are basically suited for the business segment. The major problem of this technology is the relatively high access price. Users apparently have a preference for connections to the Internet from home or from the office.

- WIMAX: WIMAX is a technology that offers voice and broadband services to users in a cell by the deployment of a base station. In this sense, it could become a serious competitor for local loop access. Some WIMAX licenses have been granted but there still are no significant results that reflect its impact in the access market.

- 2.5G and 3G wireless systems: 2.5G wireless networks are already deployed in Mexico, but 3G services still have to be regulated. However, this type of wireless access could have a low market penetration due to its relatively high cost. This case is similar to the WLAN case.

- Satellite: The major problem with this type of access is cost. Therefore, this type of access is not expected to have a high penetration in the near future.

3. Scenarios for Broadband Growth

In order to analyze the possible impact of different unbundling policies on the evolution of the number of broadband accesses, in this section we propose the following two alternative scenarios: a conservative evolutionary growth scenario and a more liberal scenario with an unbundling policy implemented.

3.1 The conservative evolutionary growth scenario

The conservative evolutionary growth scenario reflects the effect of a continuation of the historic trends, based on the hypothesis that no major policy change occurs in the near term future. Even though the number of data points is quite reduced, it can be used to construct a short term projection of the total number of broadband accesses, and to imagine what its evolution could be, if nothing dramatic takes place in the regulatory arena. This scenario does not seem to be irrelevant, under the current state of affairs, given that no provision is made in the new regulatory framework regarding the unbundling topic. The projection is based on a logistic growth model (a so-called S-curve), which can be used to extrapolate outside the

years for which data are available (2000-2005), and using a saturation level of 25 million accesses[4]. The projected values are shown in Figure 1 and Table 5.

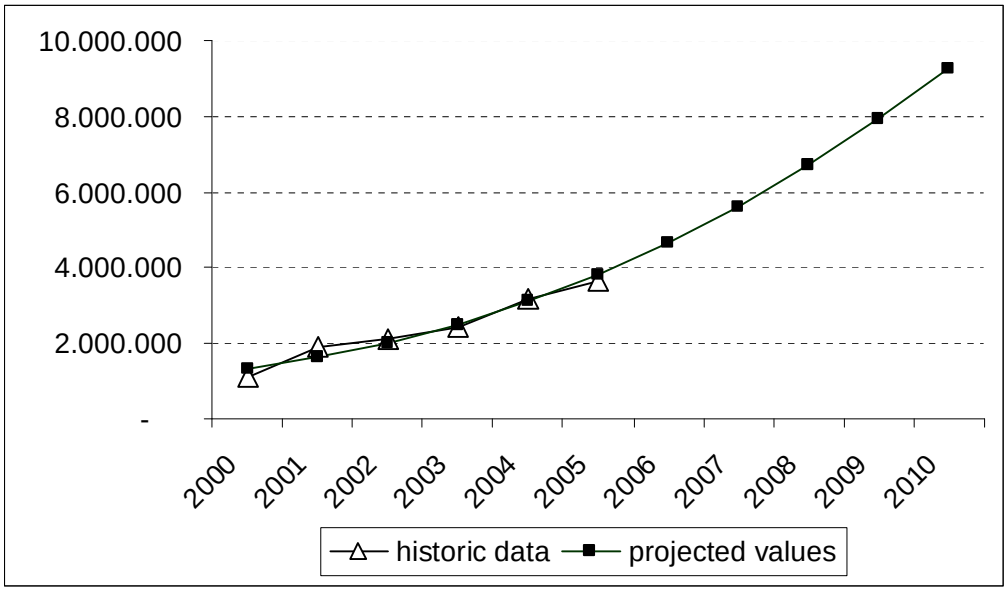

Fig.1. Projection total number of broadband accesses

Table 5. Projection of Internet accesses

Year	Historic value	Projected value
2000	1,134,987	
2001	1,883,638	
2002	2,096,415	
2003	2,444,374	
2004	3,166,903	
2005	3,654,708	
2006		4,773,051
2007		5,923,509
2008		7,351,160
2009		9,122,740
2010		11,321,017

3.2 A scenario with a full unbundling policy implemented

The more liberal scenario takes into account that a full unbundling policy is implemented. Under the following set of conditions, unbundling could trigger a more aggressive growth of broadband accesses.

- The former monopolist, who still is by far a dominant player in the markets of most (if not all) services, is forced to offer its local loop on an unbundled basis.
- The prices for unbundled elements are based on costs, and these are determined with transparent costing models, which are available to the new entrants (at least the methodology), and validated by the RA.

[4] the model showed to be very robust with respect to the saturation level

- Cable operators are allowed to offer, in addition to their traditional TV services, telephone services and access to data networks.

Under these circumstances, the following two cases could possibly be observed: In the first one Internet broadband access is offered by means of xDSL and coaxial cable and alternative technologies such as WIMAX, WiFi, PLC, etc. do not get an important section of the broadband market. In the second case the alternative technologies become a realistic alternative for having a broadband access.

For the first case, the following consequences will possibly be expected:

- Competitors to the dominant player in the access market would find incentives for deploying new services without the need of large infrastructure investments,
- As it has happened in other countries with an unbundling policy regulated and under the correct marketing and pricing strategies, current Telmex subscribers could possibly migrate to the services offered by new entrants, who will use unbundled accesses. The price reduction promoted by the competence will probably foster an increase in the number of broadband accesses. Very likely the new entrants will adopt "dual-play" strategies. The big migration will possibly originate in current subscribers, who use dial-up for Internet access, who will capitalize from a double play possibility.
- Cable operators will possibly offer a triple play approach, originating also a migration of former Telmex subscribers to their networks.

For the second case, all the consequences described for the first case are valid. Moreover, the existence of realistic alternative technologies could help in the price reduction. The alternative technologies could be helpful for reaching zones of the country where xDSL and cable infrastructures are not deployed. However, the major drawback of these technologies could the price. WLAN and 2.5G and 3G wireless technologies are suited for a business market. It is still uncertain whether PLC will be accepted by the public. In this sense, the only technology that could have a significant acceptance is WIMAX but there are several open questions about its possible deployment in Mexico.

4. Conclusions

As it is shown in the paper, without a local loop unbundling policy the number of broadband lines in Mexico will continue growing. However, it is expected that a LLU policy will help to foster a price reduction for the broadband access and, therefore, an increase in the number of broadband lines. On the other hand, it is still uncertain whether alternative technologies for broadband access such as WIMAX, WLAN and PLC will be a serious possibility for increasing meaningfully the number of broadband lines. The main problem of LLU policies in other countries is that entrants have not built their own infrastructure as it was expected. In this sense, a LLU policy in Mexico should take this problem into account in order to promote a more ambitious deployment of networks. Future work will analyze more in detail the scenarios presented in this paper.

Acknowledgement

This work was supported in part by the Spanish government in the CICYT project TIC2003-09279.

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