

**The Strategic use of mobile phone among poor people in some
Latin American Countries¹**

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Abstract

Mobile technology lets the users to implement several strategies in order to minimize their spending. We study the determinants of the use of different strategies for a sample of users surveyed during May 2007 in developing countries as Argentina, Brazil, Colombia, Mexico, and Peru. This survey is focused in low income people and includes about 5500 people. Our methodology includes two steps. First, we study the determinants of use of each strategy by means of a probabilistic model and we find that educative level and age are important determinants of the use of the alternatives. Second, we use a Poisson regression model to capture the intensity of use of these set of strategies. The findings differ among countries.

Keywords: Mobile, poverty, Count Data,

JEL: D12, C35, L86

1. Introduction

The diffusion of mobile communication technology (e.g. wireless internet, mobile phone, among others) has been enormous around the world during the last years. In particular, mobile phone has grown as a consequence of several reasons such as the strengthening of competition among operators (reduction in prices), the introduction of the modality of prepayment and the necessity of this type of devices in many jobs and social relations. Several authors, argued that mobile let the people to explore (e.g. make new friends, create new communities) and to enhance (e.g. keep in touch with family, friends and people of different cities) as well as to isolate or get status (e.g. disconnect from others or to have the most fashioned devices). These particularities make mobile an interesting example of economic behaviour. (See, Gergen (2002) and Sugiyama and Katz (2003)). Mobile also let the people to deregulate time and space controls and to transfer from a location-based social system to a person-based system in which people benefit from

permanent availability. Furthermore, many of their additional services have encouraged the development of several things as short message services (SMS), *ringtones* and Internet. However, some of them require a minimum level of digital literacy and are limited to special devices with additional costs in many cases. It explains the differences in penetration levels between developed and developing countries.

In Latin American countries, it is common to find a considerable portion of households without access to mobile at home while others have more than one mobile (see e.g. Barrantes y Galperin (2008), Mariscal (2007) and Gamboa and Otero (2008) for details on access and usage to mobile in Latin America). Latin America is characterized by low schooling and income levels. Consequently, people have to look for a set of strategies in order to minimize their living cost. In communications, mobile technology let the people to use some functionalities to decrease the cost of mobile use. Some characteristics such as people living in rural areas, low levels of literacy and bottlenecks in infrastructure, makes mobile telephony a good way for implementing public programs and it encourages digital literacy as a necessary condition for the use of things such as: M-government, M-commerce y M- banking.

The purpose of the paper is to study the determinants of the use of short run strategies in a sample of people from four Latin American countries: Argentina, Brazil, Colombia, Mexico and Peru. Short run strategies are adopted when the choice of buying the mobile is already done (Zainudeen et al, (2006)). The choice of these countries is a consequence of the data availability in the project “Mobile Opportunities: Poverty and Telephony Access in Latin America and the Caribbean” carry out by DIRSI (*Dialogo Regional sobre la sociedad de la Información*) during 2007 was focused on the patterns of access and usage of mobile and internet technology among low income households in these countries. It is important to say that, the survey is not representative of the population in each country and it implies that there is no enough evidence for formulating policy recommendations from the results. Second, survey is not available for high income or developed countries and this fact limits the possibility of making comparisons with this kind of users.

In order to do it, we use a probabilistic model to establish the impact of socioeconomic variables (gender, age, educative level, type of contract among others) on the use of each strategy. In a second step, we use a count data model for studying what determines the number of strategies used by the users.

This paper is an important step in the knowledge of the patterns of minimization strategies in Latin American developing countries. To the best of our knowledge, there are no recent works about the strategies employed by users in order to minimize the cost of use of mobile. The paper provides new information about these strategies in the specific case of poor people, and it is also a good input for public policy in communications. Donner (2008) summarizes the recent literature on mobile use in developing world but as he shows, most of the papers are done for African and Asian countries. Ureta (2008) analyze the effect of mobile on the spatial mobility among low income families for a sample of people in Chile. Rouvinen (2006) analyzes the diffusion pattern in developing countries and he includes some Latin American cases. As it can be seen, there are no recent works about Latin American countries as we study in this paper.

The paper is organized as follows: Section 2 presents a brief summary of the literature on the digital divide and the patterns of use of mobile in developing countries. Section 3 makes a short description of the sector in the selected countries. Section 4 includes the data description, methodology and results. Finally, section 5 summarizes some concluding remarks.

2. Theoretical Background.

Penetration of mobile telephony has been slower in the case of developing countries where a large majority of the population still has limited access to communications. It gives place to an extensive literature known as Digital Divide. Hargittai (2003) says that digital divide is a gap between those who have access to digital technologies and those who do not. Some of their components are the access and usage of mobile, Internet and Computers. These technologies have their own advantages for those who know how to exploit them, but it widens the gap with

respect to people without it. As it was mentioned before, mobile facilities let the users to reduce cost and to benefit from business opportunities. Gutierrez and Gamboa (2008) and Barrantes (2008) make two different approximations to the digital divide in Latin America giving some priority to the importance of the use of mobile among low income urban people. One important aspect that emerges from these studies is the impact of mobile on the society and the actual importance of mobile for being in contact with clients, friends, parents among others.

In addition, mobile has been expensive during the last decade in Latin America and it generate a set of strategies that people use in order to afford the service and to reduce their impact on their basket. In many studies, the term 'affordability' is used as a synonym of 'person's financial capacity'. In economic analysis, people choose among their alternatives, but in some cases this choice is not possible as a consequence of the availability of the good or service. Barrantes and Galperin (2008) find that affordability is the most important barrier to extending the use of mobile and their added-value services in some Latin American countries. Furthermore, Mobile communications are not a luxury during these days and the study of poverty tends to look at sufficiency of overall income to meet overall needs, rather than at affordability of meeting specific needs. Milne (2006) distinguishes two levels of affordability (or rather its lack), determined by two effects: The 'barrier' effect, which prevents people from owning a phone, or from using shared access phones other than in emergencies and the 'inhibitor' effect, which discourages people from making as many calls as they need to even when they own or have access to a phone.

The 'inhibitor' effect implies that users have to be rational in the use of mobile and they have to seek for the best use of it. The question is what kind of strategies are utilized by poor people in order to get access to the mobile telephony?. It is well known that aspects such as access to credit and low earnings are two important barriers to enter into the market for those who want make mobile calls.

In many cases, poor people do not have enough money for their basic needs (food, health, education, and rent) and they have to optimize their limited income. Although there is a consensus about their importance for the standard of living, technological change has created a new set of basic needs. Things as Internet, mobile communication and entertainment are considered necessary for living, for getting a job, for being in contact among others (their relatives, workmates, clients and competitors). Today, many things require the use of some kind of information and communication technologies,-ICTs. Consequently, they sort their spending in order to get access to most of them. Some authors show that mobile is a necessity for everyone and poor people are not the exception, (Frost and Sullivan, 2005, Bjärhov M. and Weidman E., 2007).

There are many works that assess the use of any kind of strategies the people use for reducing the cost of use of mobile in several countries. Zainudeen et al.(2006) for the case of Asia; Gamboa and Gutierrez(2008), Ramirez and De Angoitia (2008) and Frost and Sullivan (2005) for Latin American countries; Donner (2008b), Gamos (2003), and Dymond and Oestmann (2003) for Africa.

As Zainudeen et al (2006) describe, there are short and long run strategies depending on the time in which the choice is done. Long run strategies are those in which people choose the type of contract and the kind of mobile device. In the short run, people have to decide the cheapest way for communicating given that they have the mobile already.

Among short run strategies we have ‘beeping’, the use of mobile phone only for receiving calls or during off peak hours, the use of SMS and the use of mobile rented. Beeping involves calling a number and hanging up before the mobile’s owner to whom is directed the call answers. Donner (2008b) says there are three types of beeping: the first is used waiting for the return of the call and in consequence avoids the cost. The second implies a previous code with a specific meaning between the sender and the receiver and the last is a way to being in touch with their relatives. SMS does not require previous codes and it can be used for sending or receiving

information when the receiver cannot answer (during meetings, classes, and inclusive for cheating in exams). Bhagat (2007) says that its low cost is an attractive for using it.

Beeping and SMS are also used when it is not needed an immediate answer. In some cases, both are used for translating the cost to the user who returns the call. Gamos (2003) finds that among 45 percent of the mobiles that received a beep, 34 percent return the call. Other strategies as using the mobile for receiving calls or during off-peak hours show that people often have the phone for being in contact with the people who are looking for them. In Colombia, and probably in some other developing countries, the use of mobile rented in the streets is an additional way to avoid price differentials among prepaid and postpaid, and off-net vs. on-net calls. Gamboa and Gutierrez (2008) find that the people in the modality of prepayment and users whose mobile is in the largest market share firm are more frequent user of this alternative. Chakraborty (2004) find a similar activity in Bangladesh.

One important determinant of the pattern of consumption among people from low income ranges is the volatility of their income which limits their capability of being more rationale in acquiring products with the lower price per unit. Although it seems surprising, demand for telecom services in most developing countries has been shown to be very important for low-income earners (See GSM Latin America (2006), and Gutiérrez and Gamboa (2007)). Some authors estimate the proportion of mobile communications expenses to be about 10 percent of their income. (See Intelecon, (2005); Gillwald, (2005); Souter *et al.*, (2005)).

Gamboa and Gutierrez (2008) and Ramirez and De Angoitia (2008) describe this behavior for some Colombian and Mexican cities, respectively. They found that it is very common the use of alternatives for minimizing their spending. The work of Gamboa and Gutierrez (2008) is focused in the resale of minutes in the streets and the study of Ramirez and De Angoitia (2008) summarizes the long and short run strategies. They find that low income people do not use SMS and also prefer to have the phone only for receiving calls, as in the case

of other regions (Africa and Asia). Both studies are done using the same database that we used here.

3. The Sector

Latin America has grown faster in the last decade than in the eighties. In general terms, its standard of living is better because of many aspects as the reduction in poverty levels, the increase in the public services coverage, the economic growth, and the increase in the educative levels of their population. In 2007, poverty and indigence diminished compared to the previous years. Countries as Mexico, Argentina and Brazil have high per capita income relative to the region and the lowest levels of inequality. In terms of welfare indexes, Argentina and Mexico are better in the Human development rank with respect to Peru and Colombia. Some of the causes of this latent situation are the percentage of the people living in rural areas and the low level of economic growth of these economies.

-Table 1 about here-

On the other side, the urban population has increased in almost all the Latin American countries. From our sample, we can find some cases in which most of the people live in two or three major cities (Brazil, Argentina and Mexico). This situation has encouraged the increase in the coverage of education and public services, but it also has generated differences with respect to rural population. Many of the people who live in the rural areas have not access to ICTs as Internet and cellular phones. Most of the ICT growth in Latin-American countries has been in the high income groups.

Insert table 2, about here

Figure 1

As it can be seen, between 2000 and 2003 the mobile penetration was higher than fixed lines in selected countries. However, it is important to note that in Peru this behaviour is not as notorious as in the others. It is also shown that the mobile growth was faster after the introduction of the modality of prepayment and the strengthening of the competition. At the end of 2007, there were two big groups in Latin America: *America Móvil* (Mexico) and *Telefónica* (Spain).

The exponential growth of mobile in Latin American countries has only been studied recently (Mariscal and Rivera (2006), Frost and Sullivan (2006)), but their importance on the familiar budgets has not received similar attention. The current level of mobile penetration in these countries is higher than fixed lines and it is expected to continue growing. Among other factors, the modality of prepayment and the calling party pays, system encourage some of this growth. In particular, the *calling party pays* system let the people to elaborate strategies in order to reduce their communication cost as the use of beeping, because in this case who receive the call knows who is calling.

4. Empirical results

We use the data gathered in the study “Mobile Opportunities: Poverty and Access to telephony in Latin American and the Caribbean” carried out by DIRSI. This study was made in Argentina, Brazil, Colombia, Jamaica, México, Peru, and Trinidad and Tobago. The survey was designed for all these countries and it generate most than 7000 observations. However, for comparability and access to data we do not include Jamaica and Trinidad and Tobago in our estimation. Consequently, our final sample is 5512 observations.

As we mentioned before, our purpose is assessing the determinants of the use of any strategy of minimization of mobile spending. We use a *Logit* model in which the dependent

variable is whether the person has some strategies or not and the explanatory variables are age, gender, educative level, income, type of contract and the city where he/she lives.

Second, we evaluate the quantity of strategies used among those who use mobile phone in the survey. Due to it is a discrete and non-negative variable, count data models are used. The most known models are the Poisson Regression Model (PRM) and the Negative Binomial Regression model (NBRM). Among the strategies used by the mobile users we have the following:

- a. Beeping. Action in which the person who makes the call hang up before it was answered.
- b. SMS. The use of SMS is considered as a minimizing strategy since it reduces the cost and could be used everywhere.
- c. Phone receiver. This is defined as the people who answered that have the phone in order to be available (receive calls) but they do not use it to make calls.
- d. Off- peak calls. Some users try to communicate by mobile only when prices are the cheapest. During off peak hours, it is common to find lower prices than working hours.

For the estimation, all the variables mentioned before are equal to one if the person uses that strategy and zero if not. As a result, someone who uses all the strategies gets a score of 4 and so on.

In each country of the sample people were asked about the use of the above strategies for minimizing their mobile spending.

4.1 Logit models

In this part, we are interested in assessing the determinants of the use of each one of the strategies by the mobile owners. In each model, our dependent variable is equal to 1 if the respondent uses the strategy and zero otherwise. As explanatory variables, we include gender, overcrowding measured as the number of people per room as a proxy of socioeconomic status, a dummy that it is equal to one if the user has a mobile in the modality of prepayment (*Prepaid*),

a Information and communication index (ICT) constructed taking into account levels of use of mobile and fixed telephony and internet use; a dummy variable for age that it is equal to one if the user is younger than 22 years. We also include education as a continuous variable and a categorical variable. In the last case, the variable 'Education' is equal to one if the user has at least secondary education. Both specifications give us similar results.

-Table 3 about here-

The most important finding is that the use of these strategies has common patterns among the selected country samples. Those strategies that require deep knowledge of technology as SMS are used more often by young people, users with a frequent use of technologies (ICT) and people with high education. The utilization of Beeping is common among users in the modality of prepayment in countries such as Argentina and Colombia. The strategy off-peak calls, -that ask the user if he/she make calls during off-peak hours-, is used more often in Argentina and Peru (young people and people with a lower level of use of ICT). It is important to note that there are no price differentials between off-peak and peak hours in Colombia. In brief, the use of these strategies is related to the knowledge of the mobile functions and their capability of use them.

4.2 Poisson Model

Due to the design of the survey let the people to answer more than one minimizing strategy, in this part we use a discrete specification that counts the number of strategies the person use. The distribution of the population on the strategies is highly similar across the countries. A small portion neither one, nor all the strategies. Most of the people use one or two strategies, but most interesting is the fact that less developed countries tend to use more frequently 3 or 4 strategies.

-Figure 2 about here-

As we say before, we estimate a Poisson Regression Model in which the dependent variable is the number of strategies utilized, and as explanatory variables we include the same set of the previous estimation. Table 4 summarizes the results for the selected countries. We include two specifications for Brazil, Colombia and Mexico due to availability of the variable “per capita income”. For Peru, we continue using overcrowding as a proxy of socioeconomic conditions

-Table 4 about here-

As it can be seen, there seems to be no gender difference in the use of strategies with the exception of Colombia, where women use more strategies on average than men. Socioeconomic variables such as overcrowding and per capita income have the expected effect: More overcrowding (less income) is positively related to a more frequent use of these strategies. It is also found that users in the modality of prepayment use more strategies than people with a contract with the operator. Young people tend to use more strategies but in Mexico this relationship is not significant. We also include two variables of digital literacy: Schooling and ICT. Our findings are not definitive in this aspect because of the sign of the coefficients and their construction. It is important to say that literacy is very different between countries as Argentina and Mexico and it generates different results.

5. Concluding remarks

The use of strategies for minimizing the cost of mobile use is common in the cases studied. Most of the users have their mobile in the modality of prepayment. prepaid is predominant in the sample and it could be explain why the people seek to minimize their mobile spending. There are considerable differences among the cost of each one of the alternatives for communication and it could incentive the shared use of mobile in countries as Colombia. Due to these factors, the use of the mobile for receiving calls is the most often strategy employed (Brazil, Colombia, Mexico and Peru). In the other side, we can find the case of Argentina, where it is used SMS intensively. As Ramirez and De Angoitia (2008) show, poor people in

Latin American countries utilize different strategies as their similar of Asia and Africa. In our results, we can state that the literacy explain the choice of strategy used.

From the DIRSI experience, it is important to note that the surveyed do not make a correct cost-benefit analysis in their mobile spending due to the existence of barriers to credit markets and the high size of informal economies that affect the stability of the income perceived (for details, see www.dirsi.net). In many cases, the cost per minute is higher or equal to other alternatives that they cannot afford. However, high penetration levels in this segment of the population let the government to use mobile for accessing population. Social security, education and labor programs could use mobile for sending information and it will received in low and high income households.

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Table 1. Social and Telecommunication indicators

| | Argentina | Brazil | Colombia | Mexico | Perú |
|---|------------------|---------------|-----------------|---------------|-------------|
| Poverty incidence 2006 (%) ^{/a} | 21.0 | 33.3 | 46.8 | 31.7 | 44.5 |
| Per cápita income 2006 (US) ^{/b} | 5 476 | 5 641 | 2 945 | 7 755 | 3 286 |
| GINI ^{/c} | 52.8 | 58 | 58.6 | 49.5 | 54.6 |
| Human Develop. Index (rank) | 38 | 70 | 75 | 52 | 87 |
| % Urban Population ^{/b} | 90 | 85 | 73 | 76 | 73 |
| GDP growth CAGR (03-06) ^{/b} | 8% | 3% | 3.5% | 2% | 4.8% |
| Mobile penetration 2006 ^{/b} | 80.5 | | 64.3 | 52.6 | 30.9 |
| Fixed penetration 2006 ^{/b} | 24.2 | 20.5 | 17.0 | 18.3 | 8.5 |

Source: ^a. CEPAL, 2007. ^b. ITU and World Development Indicators ^c/ PNUD 2006

Data for 2003. CAGR: Composed average growth rate.

Table 2. Summary statistics in DIRSI Survey

| | Argentina | Brazil | Colombia | Mexico | Peru |
|-------------------------|------------------|---------------|-----------------|---------------|-------------|
| Socioeconomic | | | | | |
| % Female | 50.4 | 61.1 | 68.1 | 72.6 | 60.7 |
| Age (mean) | 34.8 | 36.7 | 38.1 | 36.7 | 37.1 |
| % Higher education | | | | | |
| Access and Usage | | | | | |
| % Users | 70 | 53 | 89 | 37 | 60 |
| % Prepaid | 74 | 96 | 90 | 92 | 96 |
| Calls made (median) | 6.69 | 6.55 | 11.08 | 7.06 | |
| SMS sent (median) | 33.3 | 8.09 | 8.13 | 25.91 | 8.73 |

Strategies (% of owners)

| | | | | | |
|-----------------|------|------|------|------|------|
| Beeping | 15,7 | 32,2 | 43,5 | 24,5 | 47,1 |
| off-peak calls | 17,2 | 29,2 | 28,0 | 27,2 | 40,6 |
| phone receiving | 33,3 | 49,9 | 56,7 | 57,0 | 51,0 |
| SMS | 91,0 | 36,0 | 44,0 | 52,0 | 44,0 |

| | | | | | |
|---------------|------|------|-----|------|------|
| Total Surveys | 1400 | 1000 | 800 | 1000 | 1312 |
| Total owners | 849 | 424 | 492 | 298 | 465 |

Table 3 Marginal effects for Logit Models

| | 1. SMS | | | | | 2. ONLY FOR RECEPTION | | | | |
|---------------|-------------|---------|----------|---------|---------|-----------------------|---------|----------|---------|---------|
| | Argentina | Brasil | Colombia | México | Perú | Argentina | Brasil | Colombia | México | Perú |
| Men | -0.013 | 0.016 | -0.132 | -0.029 | 0.007 | -0.007 | -0.159 | -0.132 | 0.056 | -0.016 |
| | (0.01) | (0.05) | (0.05) | (0.07) | (0.05) | (0.03) | (0.05) | (0.05) | (0.07) | (0.04) |
| Young | 0.043 | 0.169 | 0.021 | 0.111 | 0.123 | 0.015 | 0.040 | 0.021 | -0.032 | -0.012 |
| | (0.01) | (0.07) | (0.08) | (0.08) | (0.09) | (0.04) | (0.07) | (0.08) | (0.09) | (0.07) |
| Overcrowding | 0.016 | -0.015 | -0.004 | 0.002 | -0.013 | 0.017 | 0.030 | -0.004 | 0.017 | -0.010 |
| | (0.01) | (0.02) | (0.03) | (0.03) | (0.02) | (0.01) | (0.02) | (0.03) | (0.03) | (0.02) |
| Education | 0.059 | 0.139 | -0.145 | 0.128 | 0.115 | -0.013 | 0.186 | -0.145 | -0.039 | 0.002 |
| | (0.01) | (0.18) | (0.05) | (0.11) | (0.06) | (0.04) | (0.16) | (0.05) | (0.13) | (0.05) |
| Prepaid | -0.007 | 0.074 | 0.294 | 0.330 | 0.125 | 0.103 | 0.440 | 0.294 | 0.041 | 0.032 |
| | (0.01) | (0.11) | (0.08) | (0.12) | (0.16) | (0.04) | (0.07) | (0.08) | (0.13) | (0.12) |
| ict | -0.003 | 0.152 | -0.005 | 0.205 | 0.269 | -0.000 | | -0.005 | -0.087 | 0.071 |
| | (0.01) | (0.04) | (0.04) | (0.06) | (0.05) | (0.03) | | (0.04) | (0.06) | (0.04) |
| Use Intensity | 0.001 | 0.004 | 0.001 | 0.013 | 0.037 | -0.004 | -0.010 | 0.001 | -0.003 | -0.046 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.23) | (0.00) | (0.00) | (0.00) | (0.00) | (0.19) |
| N | 849 | 416 | 492 | 230 | 396 | 849 | 416 | 492 | 230 | 396 |
| ll | -169,54 | -266,58 | -319,71 | -130,71 | -227,58 | -526,17 | -263,64 | -319,71 | -156,27 | -223,00 |
| | 3. OFF-PEAK | | | | | 4. BEEPING | | | | |
| | Argentina | Brasil | Colombia | México | Perú | Argentina | Brasil | Colombia | México | Perú |
| Men | 0.023 | 0.042 | -0.032 | 0.006 | 0.089 | 0.016 | -0.058 | -0.071 | -0.098 | -0.020 |
| | (0.03) | (0.05) | (0.04) | (0.06) | (0.05) | (0.02) | (0.05) | (0.05) | (0.06) | (0.05) |
| Young | 0.066 | 0.019 | 0.045 | 0.072 | 0.045 | 0.061 | 0.115 | 0.212 | -0.064 | 0.174 |
| | (0.03) | (0.06) | (0.07) | (0.09) | (0.09) | (0.03) | (0.06) | (0.07) | (0.07) | (0.09) |
| Overcrowding | -0.003 | 0.000 | 0.029 | 0.033 | -0.007 | 0.020 | 0.008 | 0.031 | 0.016 | 0.026 |
| | (0.01) | (0.02) | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.03) | (0.02) | (0.02) |
| Education | 0.022 | -0.123 | -0.043 | 0.148 | -0.046 | 0.017 | -0.233 | 0.105 | 0.156 | -0.019 |
| | (0.03) | (0.11) | (0.04) | (0.13) | (0.06) | (0.03) | (0.09) | (0.05) | (0.12) | (0.06) |
| Prepaid | 0.011 | -0.061 | 0.036 | 0.069 | 0.242 | -0.023 | 0.042 | 0.009 | 0.076 | 0.168 |
| | (0.03) | (0.12) | (0.06) | (0.10) | (0.13) | (0.03) | (0.11) | (0.08) | (0.10) | (0.12) |
| ict | -0.045 | 0.039 | -0.011 | -0.185 | -0.068 | -0.032 | | 0.048 | -0.013 | 0.086 |
| | (0.02) | (0.03) | (0.03) | (0.06) | (0.05) | (0.02) | | (0.04) | (0.05) | (0.04) |
| Use Intensity | 0.000 | 0.002 | 0.002 | 0.004 | -0.154 | -0.000 | 0.001 | 0.004 | 0.002 | -0.066 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.21) | (0.00) | (0.00) | (0.00) | (0.00) | (0.23) |
| N | 849 | 416 | 492 | 230 | 396 | 849 | 416 | 492 | 230 | 396 |
| ll | -375,41 | -246,15 | -289,08 | -133,53 | -268,54 | -356,60 | -256,47 | -321,71 | -131,11 | -268,14 |

Standard Errors in parentheses

Table 4.

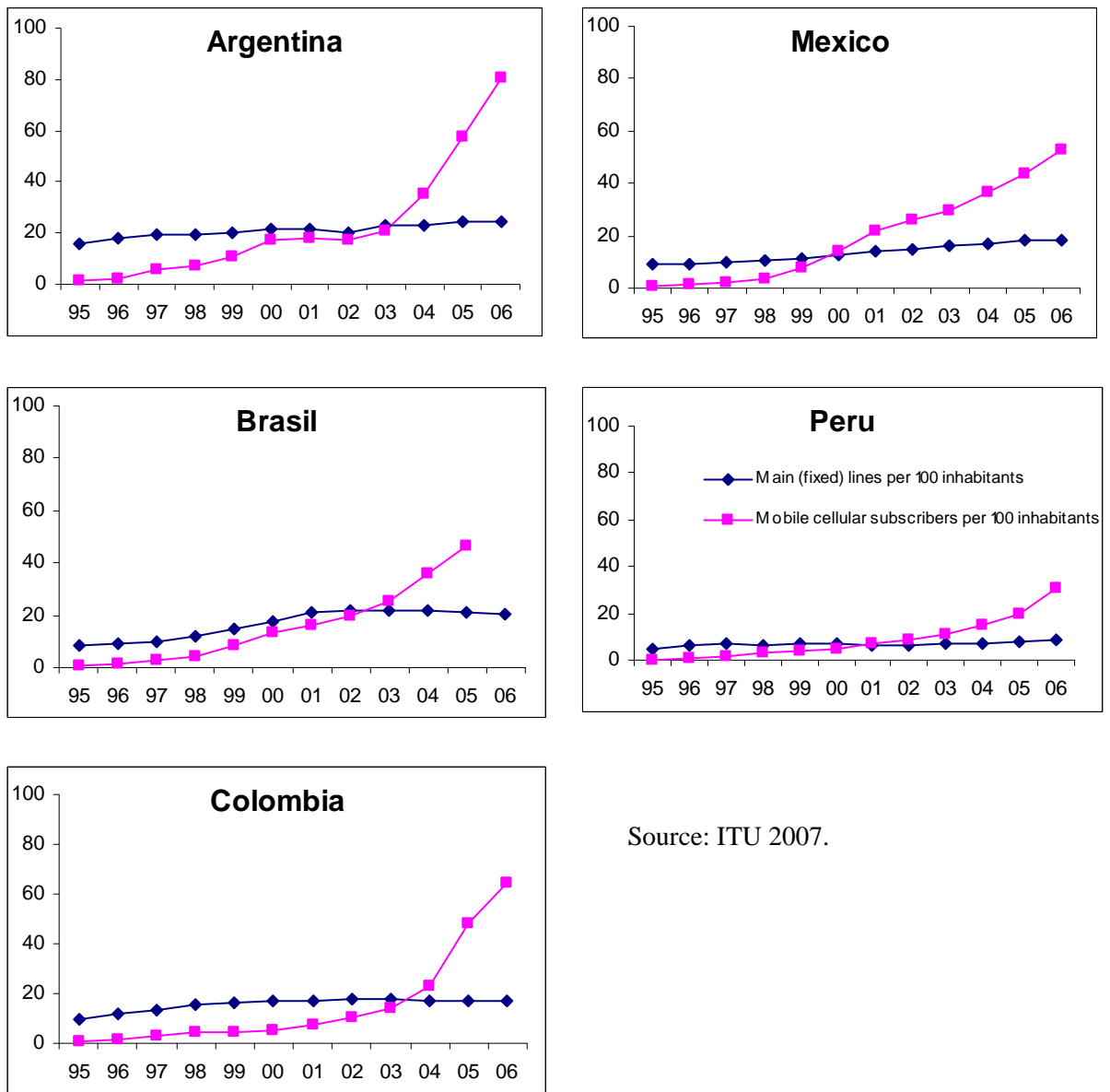
Poisson Regression Model

Marginal Effects

Dependent Variable : Numer of Strategies Used

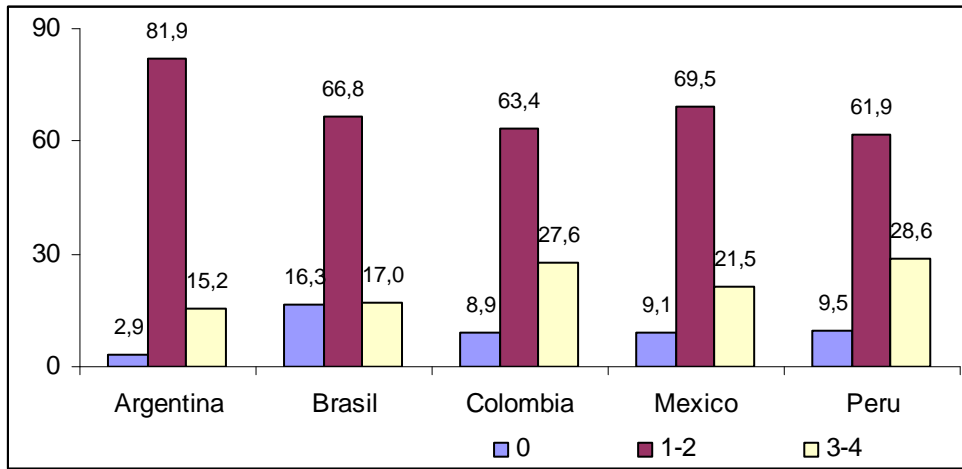
| | Argentina | Brazil | Colombia | Mexico | Perú | | | |
|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|
| Gender | 0.0081 (0.06) | -0.1320 (0.10) | -0.1333 (0.11) | -0.2059 (0.10) | -0.1939 (0.10) | -0.0589 (0.14) | -0.0683 (0.14) | 0.0552 (0.10) |
| Young | 0.2170 (0.07) | 0.3145 (0.13) | 0.2548 (0.13) | 0.4172 (0.15) | 0.4210 (0.15) | 0.0898 (0.17) | 0.0907 (0.17) | 0.3612 (0.15) |
| Schooling | 0.1134 (0.06) | -0.0837 (0.24) | 0.0387 (0.30) | -0.0535 (0.10) | -0.0378 (0.09) | 0.2971 (0.30) | 0.2481 (0.30) | 0.0884 (0.13) |
| Overcrowding | 0.055 (0.02) | 0.038 (0.04) | | | 0.009 (0.05) | 0.059 (0.05) | | -0.007 (0.04) |
| Prepaid | 0.0827 (0.07) | 0.399 (0.20) | 0.400 (0.20) | 0.2380 (0.16) | 0.2238 (0.16) | 0.4061 (0.23) | 0.3745 (0.23) | 0.5670 (0.26) |
| Ict | -0.08 (0.05) | 0.2149 (0.07) | 0.2115 (0.08) | 0.0331 (0.07) | | -0.0843 (0.10) | -0.1038 (0.10) | 0.2657 (0.08) |
| Capital city | 0.004 (0.07) | -0.245 (0.10) | -0.224 (0.11) | 0.413 (0.11) | 0.425 (0.11) | -0.123 (0.14) | -0.146 (0.14) | 0.284 (0.11) |
| Number of calls | -0.003 (0.00) | 0.002 (0.00) | 0.002 (0.00) | 0.007 (0.00) | 0.007 (0.00) | 0.012 (0.01) | 0.011 (0.01) | -0.180 (0.59) |
| Per capita income | | | -0.001 (0.00) | 0.001 (0.00) | | | -0.0000 (0.00) | |
| N | 849 | 416 | 372 | 492 | 492 | 230 | 230 | 396 |
| ll | -1.156,41 | -596,81 | -534,13 | -739,71 | -739,81 | -336.089,00 | -336,45 | -595,46 |

Figure 1. Telephony penetration in Selected Countries



Source: ITU 2007.

Figure 2 Number of Strategies used by country (% of owners in the sample)



Source: DIRSI Survey.