Variations in expenditure on communications in developing countries

A synthesis of the evidence from Albania, Mexico, Nepal and South Africa (2000-2003)

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Introduction

In the analysis and debates about the so-called 'information society' and its impacts on developing societies throughout the world there is usually an excess of generalities and speculation about the concrete effects that information and communication technologies (ICTs) have on the everyday lives of their people. Frequently, the discussion and analysis are based on very general statistics on the national number of computers or total figures for web pages, mobile phones or wireless hotspots in a specific area or for a particular group of users. Even though this information is useful, a more grounded analysis of the concrete place that the use of these technologies has in the everyday life of the inhabitants of these societies is needed, in order to more deeply understand the place that ICTs occupy and how they can contribute to improving social inclusion, especially for the low income population.

In order to advance in the direction of a more 'micro' analytical approach to the reality of ICTs use in this paper – which is part of the output of the project "Telecom Demand: Measures for Improving Affordability"[1]- the expenditure on communications by households in four developing countries is examined: Albania, Mexico, Nepal and South Africa over the period 2000 to 2003. The relative amount of household income that families devote to communications is analysed for these countries first separately and then comparatively. The data for the analysis come from household expenditure surveys conducted by the central statistical agencies of the countries under study.

Household expenditure data in developing countries has been widely used to describe and analyse the variables accounting for general household consumption (for some examples see (Akita 1999; Bhalotra 1998; Gong 2000)), to study the expenditure and demand for specific goods such as food (Girma 2002) or water (Hajispyrou 2002), or to compare consumption among different countries (Maitra 2000; Selvanathan 2003)[2]. Unfortunately, none of these analyses has considered the expenditure on communications as a main objective, even though most of the surveys now include this area as a separate type of household expenditure.

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[2] For a complete list of papers ordered by country see http://www.worldbank.org/lsms/research/reshome.html#papers. Also there is a useful list of related material at http://ideas.repec.org/JEL/D12.html

Expenditure on communications is usually defined for the purpose of these surveys as the sum of all the expenditures related to the use of the means of communication including mail, telephone (landlines and mobile phones) and the Internet by the members of the household in a given period of time. The study of this expenditure provides a detailed quantitative perspective (covering all levels of usage) on the very specific space that communications occupy in the economy of the household, which complements the deeper and qualitative understanding derived from specific research on ICT use (which naturally tend to focus on higher income users). Monetary expenditure on communications represents an empirical approach to the examination of the place that ICTs use occupies in the lives of the population of the developing societies considered in this paper. In addition, the use of household expenditure surveys in the study of expenditure on communications allows not only a comparison among the different types of expenditures, but also among different countries. Due to the fact that these kinds of surveys are mostly based on an international standard methodology[3], they can be used to compare the characteristics of different societies with relative ease as compared to the difficulties of comparison associated with other types of social science research methods.

With respect to the selection criteria for the countries examined in this paper, from the beginning the idea was to study a small group of developing societies from different areas of the world in order to compare the place that communications has in the general expenditure of the households. The second selection criterion was the requirement for reasonably recent data (no older than 2000) with separately identified communications expenditure. Using these criteria, the countries selected for study were Albania, Mexico, Nepal and South Africa. On the basis of only four countries of course we cannot reach general conclusions. However, these countries are so disparate that any common features that we do observe among them may warrant further investigation to see if they apply more widely.

In the following sections the place of expenditure on communications in the general household expenditure of each country is analysed separately with a view to establishing some relationships between this expenditure and other characteristics of the household members; such as their location and gender, age and education of the head of the household. In the second part of the paper the four countries are compared with each other and with some industrialised societies in order to put the results into a wider context. The final section offers general conclusions on the place that communications expenditure occupies within the general expenditure of the households of the countries under study.

1. Countries under study

1.1. Albania (2002/2003)

Albania is the smallest country under study with only three million inhabitants. In terms of poverty and inequality, although still 25% of the country's population live in poverty (WB 2005a), in the context of the countries under study it has the lowest percentage of population with under $ 2 per day (11.8%) and the lowest Gini index (28.2) as can be seen in table 1. However, its gross national income (GNI) per capita is quite low ($1740), well behind the GNI per capita of $22,810 in Western Europe. Along with this situation,

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[3] Much of the work to standardized this kind of surveys has been done by the Living Standard Measurement Study (LMSS) of the World Bank (for more information see http://www.worldbank.org/lsms/)

"Despite an enviable record of almost sustained economic growth in the Albanian economy since 1995 (about 5% per annum), there have been some serious social and economic costs. These costs have included growing income inequalities, massive emigration from the poorest regions, and crumbling economic and social infrastructure. … 25 - 30 per cent of the population of Albania is still living under the national poverty line, and a disproportionate number of these are women. In addition, a further 30 per cent are very close to the poverty line, and can be considered as potentially very vulnerable to an economic downturn" (UNDP 2005b: 14)

This situation of still limited development and growing inequality is well reflected when we observe the reality of ICT use in the country.

Table 1. General and ICTs indicators for Albania

General Indicators 2003-2005			ICTs indicators 2003-2005		
Population (millions)		3	Fixed telephones	Per 1000 people	83
% of population urban		44%		Cost of a call in $ per 3 minutes	0.02
Gross national income per capita	2003	$1740		Waiting list (thousands and as % of total lines)	12 (5%)
	Rank 2003	120	Mobile phones (per 1000 people 2003)		358
	PPP	$5.070	Personal computers (per 1000 people 2003)		11.7
Population below $2 a day		11.8%	Internet	(Users per 1000)	10
Human development rank		72	Internet monthly price	20 hours of use	U$ 29
Gini Index		28.2		% of monthly GNI per capita	24.8

Sources: World Development Indicators (WB 2005b), Human Development Report (UNDP 2005).and ICT at a Glance Albania (WB 2003)

In terms of ICT indicators, Albania has experienced a considerable decline in the United Nations' ICT diffusion rankings[4] (UN 2005:8) from the position 104 in 1995 to 127 in 2002, and occupied the lowest position among Eastern European countries. This low position mainly results from limitations in access to telephones, computers and the Internet. Table 1 shows that the number of telephone landlines per 1000 people is still quite low (83). This situation is partly alleviated by a relatively high number of mobile phones (358 per 1000 people), but still only one out of four low income individuals (the 20% of lowest income) have access to fixed or mobile phone whatsoever (UNDP 2005b: 50). Regarding computers and the Internet the access is even lower. Only around 1% of the population has a computer or is an Internet user and access to the service is still quite expensive (the cost of 20 hours of usage represents 24% of monthly GNI per capita).

In relation to the absolute expenditure in communications, chart number 1 shows us visually that in the case of Albania there is a positive relationship between the amount of money devoted to communications and the total monthly expenditure of the families, but also a very considerable scatter about the trend line. This points to the importance of exploring other variables besides total expenditure which affect spending on communications. The positive trend is also maintained in relation to the relative importance of the expenditure on communication among all other expenditures of the household. As table 2 shows the percentage devoted to communications varies positively with the general expenditure of the household. There is a clear trend for families with higher levels of expenditure[5] to devote a

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[4] This ranking is given by the average of each country in relation with the four key areas related to the introduction of ICTs: diffusion, connectivity, access and policy.
[5] It is important to note that the movement from one decile of expenditure to another is not always a result of increasing prosperity but also could be related to an increase in household size, because households with more members spend more. This does not necessarily imply that their situation becomes any better; often the opposite is

higher percentage of expenditure to communications, from 1.1% in the case of the first decile of expenditure to 4.8% in the case of the tenth. Along with expenditure on rent and home improvements, expenditure on communications is one of the few variables that shows a fairly constant negative relationship with expenditure on food and drink which is - by far - the most important expenditure by groups at lower consumption levels.

Chart 1. Scatter plot and linear regression of communication expenditure per total monthly expenditure in Albania[6]
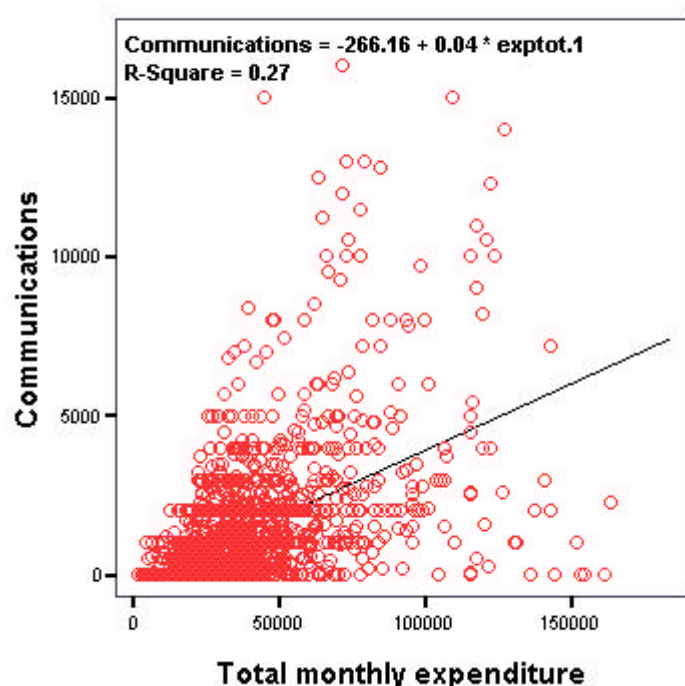
Note: expenditure expressed in local currency

In order to analyse the characteristics of the Albanian families that may affect the percentage of the expenditure dedicated to communications, table 3 shows the results of a regression analysis based on four regression models. In the first (I) only the variable location (urban versus rural) is included. In models II and III, two demographic variables are included (sex and age of the head of the household) while model IV also includes the level of education of the head of the household[7]. The first model shows a significant difference of 1.38% in the percentage devoted to communications between the families that live in urban areas versus the ones that lives in rural areas. The inclusion of both gender and age of the head of the household does not affect this value very much and only the families in which the head of the household is an adult aged 40 to 59 show a significant difference (0.66%) compared to those in which the head is a young adult (20 to 39 years old). The

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true (as happens in overcrowded houses). This also means that if we were able to repeat this analysis looking only at per-capita expenditure the relationship between prosperity and expenditure might be even more important.
[6] A Scatter plot is a plot of the values of Y (in this case expenditure in communications) versus the corresponding values of X (in this case the total monthly expenditure). The regression line is a line that indicates the imaginary point in which every given amount on expenditure on communication crosses with their correlative total monthly expenditure given by the regression equation, that can be seen on the top left of the chart.
[7] It is important to note that all these explanatory variables are more or less interrelated to a certain degree (e.g. higher degrees of education generally can be found among urban households rather than rural) and that it is not possible to fully individualize the effect of each one of them.

inclusion of the level of education of the head of the household in model IV changes this situation. The location of the family loses some of its importance, declining from 1.36% to 0.94% - but is still significant - while both 'complete high school' and 'university degree' are significant, especially the second which differs by 2.11% between families, more than two times the difference for location. This is to say that families in which the head of the household has a university degree tend to spend more than double the percentage on communications in comparison with households in which the head of the household has only completed basic education.

Table 2. Percentage of expenditure by deciles of expenditure Albania 2002/03

| | | | | | Deciles of monthly expenditure | | | | | | Total |
	I	II	III	IV	V	VI	VII	VIII	IX	X	
Food and drinks	65.3%	65.0%	63.6%	61.3%	58.2%	55.8%	54.1%	51.1%	45.9%	40.8%	50.9%
Rent and home improvements	6.9%	8.9%	11.6%	12.6%	14.2%	16.2%	17.6%	21.1%	23.3%	35.8%	22.6%
Water, gas, heating combustible	9.8%	7.2%	9.0%	8.1%	7.4%	6.3%	6.9%	5.3%	4.5%	2.9%	5.5%
Public transport	1.3%	1.1%	0.9%	1.1%	1.3%	1.1%	0.8%	1.0%	0.7%	0.3%	0.8%
Home maintenance, products and services	6.2%	5.6%	4.6%	4.1%	4.3%	4.0%	3.5%	3.4%	3.6%	2.0%	3.4%
Personal care	2.4%	2.6%	2.3%	2.4%	2.6%	2.8%	2.5%	2.8%	2.9%	2.0%	2.5%
Newspapers, books, CDs	0.2%	0.1%	0.2%	0.2%	0.3%	0.3%	0.4%	0.3%	0.4%	0.3%	0.3%
Communications	**1.1%**	**1.6%**	**1.7%**	**2.9%**	**3.4%**	**3.8%**	**3.9%**	**3.6%**	**4.0%**	**4.8%**	**3.8%**
Clothing and shoes	4.3%	5.0%	3.7%	3.7%	4.3%	4.6%	4.4%	4.8%	5.6%	3.6%	4.3%
Domestic goods	0.4%	0.4%	0.5%	0.5%	0.6%	0.6%	0.5%	0.6%	0.7%	0.4%	0.5%
Travel/tourism	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.5%	0.2%	0.4%	0.2%
Fuel and vehicle maintenance	0.0%	0.2%	0.2%	0.4%	0.3%	0.7%	2.0%	1.6%	3.6%	3.6%	2.1%
Other expenditures	1.9%	2.1%	1.7%	2.6%	2.8%	3.3%	3.0%	3.7%	4.1%	2.8%	3.0%
Communications *	109.3	257.9	341.1	682	917	1184.9	1376.3	1530	2195	5247	1384
Total *	10,201	15,993	19,650	23,254	27,002	31,044	35,425	42,354	54,414	109,040	36837

Source: own calculations based on data from the 2002-2003 Albania Panel Survey (INSTAT 2003)
* In local currency

Table 3. Regression percentage of percentage of expenditure on communications in Albania 2002-2003 (non-standardized coefficients)

		I	II	III	IV
Constant		2.33** [0.13]	2.15** [0.27]	1.82** [0.33]	2.04** [0.35]
Location	Urban = 1	1.38** [0.18]	1.39** [0.18]	1.36** [0.18]	0.94** [0.21]
Sex of head of household	Male = 1		0.2 [0.27]	0.15 [0.27]	-0.33 [0.3]
Age head of household	40 to 59 years= 1			0.66* [0.23]	0.53 [0.23]
	Over 60 years =1			0.25 [0.26]	0.54 [0.27]
Education head of household	High School = 1				0.75** [0.22]
	University = 1				2.11** [0.32]
R²		**0.03**	**0.031**	**0.035**	**0.064**
Observations		**1779**	**1778**	**1778**	**1630**

Here, the R² of each of the models is low, but it is interesting to see that when the education of the head of the household is included, the percentage of the variance that the model explains doubles from 3.5% to 6.4%. We can conclude from this analysis that the location of the household is a central explanatory variable in relation to expenditure on communications by the household, but when the education of the head of the household is included, possession of a university degree appears to be the variable that affects the level of expenditure on communications the most.

1.2. Mexico (2000)

Mexico is the biggest country in this study. While being a very big economy - occupying the position of number ten in terms of its total GNI based on data from the World Bank (WB 2005b) - the main problem it faces in terms of development is the high level of inequality in the distribution of income. This can be observed in its Gini index of 54.6 which is quite typical in the Latin-American context (Londono 1997). This situation is illustrated by the fact that, even though the GNI per capita is $6,230, there is still 26.3% of the population living on less than $2 per day, more than double the percentage in Albania, an economy with a much smaller GNI per capita.

Table 4. General and ICTs indicators for Mexico

| General Indicators 2003-2005			ICTs indicators 2003-2005		
Population (millions)		105	Fixed telephones	Per 1000 people	158
% of population urban		75%		Cost of a call in $ per 3 minutes	0.16
Gross national income per capita	$ 2003	$6230		Waiting list (thousands and as % of total lines)	137 (1%)
	Rank 2003	68	Mobile phones (Per 1000 people 2003)		291
	PPP	$9590	Personal computers (Per 1000 people 2003)		82
Population below $2 a day		26.3%	Internet	(Users per 1000)	118
Human development rank		53	Internet monthly price	20 hours of use	U$ 23
Gini Index		54.6		% of monthly GNI per capita	4.6

Sources: World Development Indicators (WB 2005b), Human Development Report (UNDP 2005).and ICT at a Glance Mexico (WB 2003)

This inequality is reflected in the patterns of adoption of ICTs in the form of the development of what has been called a "patchwork adoption" (Garcia-Murillo 2003) of technologies[8]. In this specific context "the great disparities that exist in these Latin American economies result in some business and consumer segments adopting sophisticated technologies early while others are likely to take much longer to adopt it if at all" (Garcia-Murillo 2003:2). Among the factors that contribute to this situation are the lack of telephone infrastructure in vast areas of the countries, along with high variations in terms of income, access to relevant education, and ICT development and experience. These disparities, in the particular case of Mexico, mean that although the country has been one of the major gainers in the United Nations' ICT diffusion rankings (UN 2005:7) from the position 116 in 1995 to 73 in 2002, it is still – by far - the lowest performer in the OECD area (UN 2005:9).

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[8] This refers to "uneven patterns in the adoption of technologies that lead to some segments of the business and residential sectors using most advanced tools while others are work with obsolete or traditional paper methods" (ibid. 2).

In the context of the countries under study here, the country presents some of the highest indicators, especially in terms of telephone access and Internet penetration. In relation to telephone access, although the cost of the calls is much higher than in Albania or Nepal, the rates of penetration of telephone landlines are higher, at 158 telephone lines per 1000 inhabitants. The rate of penetration of mobile telephony is lower than in Albania[9] but still high, at 291 handsets per 1000 inhabitants, while again the possession of personal computers and the use of the Internet are among the highest in the group (at 82 and 118 per 1000 inhabitants respectively). The last rate can be linked both with the relatively high number of fixed telephone lines and with the fact that the cost of the Internet is a relatively low proportion of income, with 20 hours of service costing less than 5% of the GNI per capita.

Chart 2. Scatter plot and linear regression of communication expenditure per total monthly expenditure in Mexico
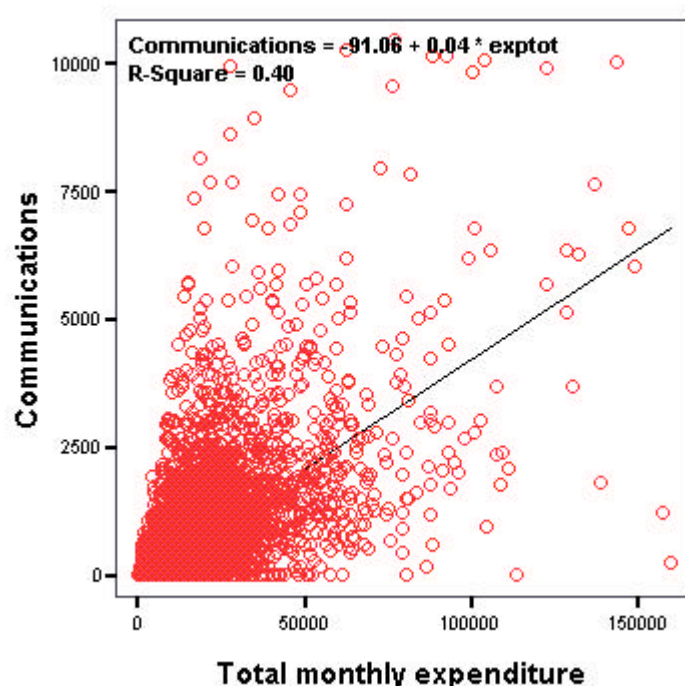
Note: expenditure expressed in local currency

This higher access to communication is reflected in the fact that the population of the country represents one of the higher expenditures on communications of the four countries under study here. In relation to the absolute expenditure, chart 2 shows that there is commonly a positive relationship between more expenditure in communications and more general expenditure in the household, although again there is very considerable scatter about the trend line.

Table 5 shows the relationship between expenditure on communications and other products and services by deciles of expenditure, which seems to be quite similar to that for Albania. From the lowest consumption groups to the highest we can see how the percentage of expenditure on communications rises from 1.2% to reach a peak in

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[9] This can be explained by the fact that the survey was conducted in 2000 and by the rates of growth of the mobile market, especially in the developing world. For example the three year difference between Nepal and Albania has to be taken into consideration.

the IX decile of 4.2%, descending to 3.8% in the highest expenditure group. When considering other activities, the variations appear to be less clear than in the case of Albania. While the relevance of food and drink diminishes in relation to total expenditure (as in the Albanian case), the expenditure that is left is allocated to very diverse groups of activities, including communications. In this case the patterns of consumption are much more diverse than those found in Albania and South Africa, as we will see.

Table 5. Percentage of expenditure by groups of items by deciles of expenditure Mexico 2000

					Deciles of monthly expenditure						Total
	I	II	III	IV	V	VI	VII	VIII	IX	X	
Food and drinks	49.4%	49.6%	47.3%	44.7%	43.1%	41.0%	37.8%	34.7%	29.6%	19.3%	31.5%
House rent and improvements	10.5%	9.7%	9.7%	10.2%	9.3%	8.7%	9.4%	8.8%	9.0%	8.7%	9.0%
Public transport	3.9%	5.0%	5.8%	6.0%	6.3%	6.3%	6.8%	5.7%	4.5%	2.1%	4.4%
Home maintenance products and services	9.3%	7.3%	6.5%	5.9%	5.6%	5.3%	5.0%	4.8%	4.8%	5.4%	5.4%
Personal care products	5.9%	5.7%	5.7%	5.7%	5.4%	5.6%	5.2%	5.0%	4.8%	3.5%	4.6%
Education	2.0%	3.5%	3.7%	4.6%	4.9%	5.3%	6.3%	6.7%	7.3%	11.7%	7.9%
Newspapers, books and CDs	0.2%	0.2%	0.3%	0.3%	0.4%	0.6%	0.7%	0.8%	1.0%	1.2%	0.8%
Entertainment	0.1%	0.3%	0.5%	0.6%	0.9%	0.9%	1.3%	1.7%	1.8%	2.7%	1.7%
Communications	**1.2%**	**1.5%**	**1.9%**	**2.2%**	**2.5%**	**3.0%**	**3.1%**	**3.6%**	**4.2%**	**3.8%**	**3.4%**
Clothing and shoes	5.5%	6.0%	6.1%	6.3%	6.8%	6.8%	7.0%	7.2%	7.3%	6.7%	6.8%
Domestic goods	0.7%	0.7%	0.8%	0.8%	0.9%	1.0%	0.8%	1.0%	1.0%	0.9%	0.9%
Health	6.9%	4.9%	4.4%	4.4%	4.4%	3.8%	3.1%	2.9%	3.6%	3.2%	3.6%
Domestic technologies	0.3%	0.6%	0.6%	0.8%	0.9%	1.0%	1.4%	1.3%	1.4%	1.2%	1.2%
Furniture	0.3%	0.7%	0.9%	1.0%	1.3%	1.2%	1.9%	2.7%	2.5%	4.5%	2.8%
ICTs	0.2%	0.3%	0.7%	0.8%	0.7%	0.9%	1.0%	1.2%	1.3%	1.4%	1.1%
Travel/Tourism	1.0%	0.8%	0.8%	0.7%	0.7%	0.8%	0.8%	1.0%	1.0%	1.3%	1.0%
Car, bike, etc.	0.0%	0.3%	0.7%	0.9%	1.0%	1.6%	0.6%	2.1%	3.6%	6.2%	3.3%
Fuel and vehicle maintenance	0.5%	1.3%	1.8%	2.0%	2.6%	3.4%	4.0%	4.8%	5.9%	6.2%	4.7%
Other expenditures	2.1%	1.8%	2.0%	2.3%	2.4%	3.0%	3.6%	4.1%	5.7%	9.7%	5.8%
Communications *	23.4	60.3	105.3	155.6	223.8	319.3	400.1	585.9	955	1818.6	464.7
Total *	1991	4125	5692	7195	8819	10712	12900	16445	22736	47896	13851

Source: own calculations based on the data from the Encuesta nacional de gastos de los hogares (INEGI 2000).
* In local currency

Finally, using the same four model regression for percentage of the income devoted to communications as in the case of Albania, model I - which includes only the location of the household – this shows a similar pattern to the one in Albania, with urban location more than doubling the percentage devoted to communication as part of the general expenditure when compared to rural location (1.61% versus 3.45%). However, this similarity disappears when we include both the gender and age of the head of the household in the model. As shown in columns II and III in table 6, in Mexico both age and gender of the head of the household are significant predictors of the percentage devoted to communications, while for location, the significance remains more or less the same.

Model II shows that when the head of the household is male, this results in a negative impact of –0.82% on the expenditure on communications, which is less important than the result for location (1.78%) although it is still significant. One explanation for this negative effect could be that female-headed households have a

male partner working away from home with whom they communicate frequently (something that is quite probable if we take into consideration the high rates of migration of Mexican workers to the US) but further research would be needed to clarify this point. When the age of the head of the household is introduced in model III, the significance of sex diminishes and age becomes the second most important factor after location, especially in the case of families in which the head of the household is more than 60 years old (making a difference of 1.3% in the percentage devoted to communications). One hypothesis is that age is relevant because of the possibility that the older the head of the household is, the larger the household, indicating that general expenditure (including communications) is higher.

Finally model IV shows that when education is introduced sex and age become more important while location loses some of its relevance, especially in the case of households in which the head is more than 60 years (which results in a difference of 2.47%). At the same time the possession of a university degree appears to make a significant difference of 1.84% in expenditure. In sum, for the Mexican case all the variables seem to be relevant predictors of expenditure on communications, especially location and when the head of the household is over 60 years old or has a university degree.

Table 6. Non-standardized coefficients of regression percentage of expenditure on communications in Mexico 2000

		I	II	III	IV
Constant		1.61**	2.32**	1.44**	1.4**
		[0.07]	[0.12]	[0.14]	[0.16]
Location	Urban= 1	1.84**	1.78**	1.89**	1.41**
		[0.09]	[0.09]	[0.09]	[0.11]
Sex of head of household	Male = 1		-0.82**	-0.56**	-0.96**
			[0.11]	[0.11]	[0.11]
Age head of household	40 to 59 years =1			0.81**	1.16**
				[0.1]	[0.11]
	Over 60 years = 1			1.3**	2.47**
				[0.12]	[0.15]
Education head of household	High School = 1				0.91**
					[0.12]
	University = 1				1.84**
					[0.15]
R²		0.036	0.041	0.053	0.081
Observations		10078	10078	10019	8370

Note: ** indicates a correlation at .001 significance level
Note: In parenthesis is the standard error

1.3. Nepal (2002/03)

With a GNI per capita of a mere $240 and 80% of its population living on less than $2 per day, Nepal is by far the poorest of the countries considered here. In accordance with the United Nations Development Programme, one of the main causes of poverty in the country, among others (such as low economic growth and low agricultural productivity), is related with "low levels of social and economic infrastructure, even in the contexts of south Asian countries" (UNDP 2001:33). This inadequate infrastructure, especially in relation to access to education, health and other public services, has limited the degree to which the population of the country can develop

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higher degrees of empowerment, a central element for Nepal's development (UNDP 2004), especially in the case of rural women and other minorities.

This lack of infrastructure is also clearly visible in the case of ICTs. Along with Bangladesh, the country is the lowest performer in the South Asia area in terms of the United Nations' ICT diffusion index, occupying the 142 position (UN 2005:6) among the 165 countries included in the study. This low position is given mainly by its lack of ICT connectivity and infrastructure with only 16 fixed telephone lines, 2 mobile phones and 3.7 personal computers per 1000 inhabitants. Also the waiting lists for a fixed telephone line are by far the highest of the four countries under study (286.000, representing 72% the total number of lines already in existence in the country), a fact that reveals a huge demand for communications facilities has not been satisfied. Also only 3 people out of 1000 uses the Internet regularly and the cost of 20 hours of this service, although fairly low by international standards, represents more than 70% of the monthly GNI per capita.

Table 7. General and ICTs indicators for Nepal

General Indicators 2003-2005		
Population (millions)		25
% of population urban		13%
Gross national income per capita	$ 2003	$240
	Rank 2003	192
	PPP	$1470
Population below $2 a day		80.9%
Human development rank		136
Gini Index		36.7

ICTs indicators 2003-2005		
Fixed telephones	Per 1000 people	16
	Cost of a call in $ per 3 minutes	0.01
	Waiting list (thousands and as % of total lines)	286 (72%)
Mobile phones (Per 1000 people 2003)		2
Personal computers (Per 1000 people 2003)		3.7
Internet	(Users per 1000)	3
Internet monthly price	20 hours of use	U$ 13
	% of monthly GNI per capita	70.3

Sources: World Development Indicators (WB 2005b), Human Development Report (UNDP 2005).and ICT at a Glance Nepal (WB 2003)

In summary, ICTs in the country, even though the sector "has grown as fast, if not faster, than any other country in the South Asia region – despite the absence of foreign investment" (ITU 2000b), are still quite limited as has been clearly recognized:

> "An important milestone was reached in 1999 when teledensity reached one line per 100 inhabitants. However, there are still more than 260'000 on the waiting list, implying an average waiting time of more than six years (those on the waiting list have paid a deposit of 50 Rs, just under 1US$). The price of line connection is 2'000 Rs (around US$29). Around two-thirds of the telephones are in the Katmandu valley, which accounts for less than 3 per cent of the population Katmandu itself has a teledensity of 18.2 lines per 100 inhabitants compared with 1.07 in the country as a whole and 0.06 in rural areas (data for mid-November 1999). … Of these [75] districts, 5 do not have a local exchange and use HF radio. Although some of the districts have an exchange, no lines are connected. In total, twelve districts are without any direct service. The total population of these districts without direct service is 1.2 million" (ITU 2000a) 5.

It is also worth noting that at the time of the household survey the regular monthly fixed line rental was 200NR. Mobile service was only available in selected urban areas, and for the most part only on a postpaid basis (prepaid service was first introduced during the survey period, and supplies rapidly sold out). In this situation it is not surprising that communications expenditure is quite low. According to the analysed data, over 50% of the households did not spend money on communications

at all during the period covered by the survey[10]. As can be seen in chart 3, absolute communication expenditure in relation to general monthly expenditure shows a visibly lower correlation in the case of Albania or Mexico confirmed by the low r-square of the regression (0.09) This may be linked with the fact that many rural Nepalese households, even if relatively comfortably off, have very limited physical access to phone service.

Chart 3. Scatter plot and linear regression of communication expenditure per total monthly expenditure in Nepal
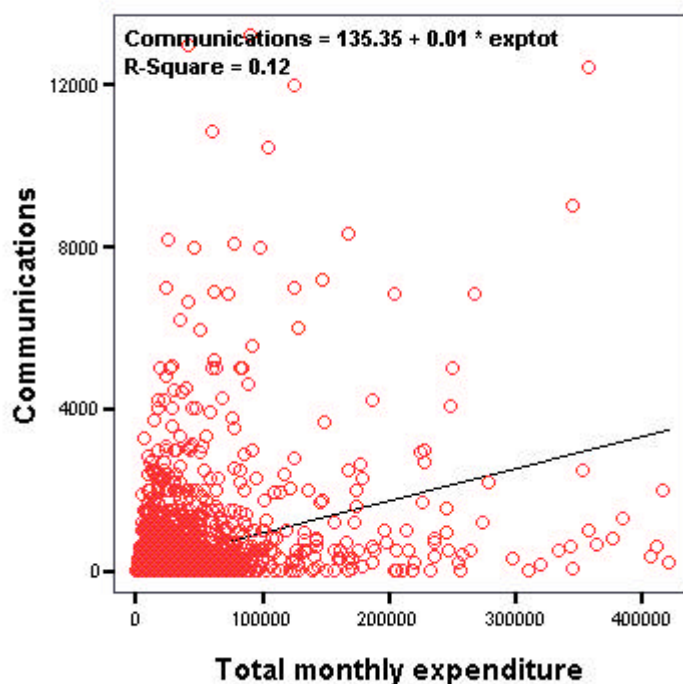
Note: expenditure expressed in local currency

Also this low expenditure is reflected in table 8, which shows that this expenditure has the lowest relative significance level of the four countries. In this case, even for the higher expenditure groups, the amount of resources devoted to communications is not more than 2.3% of total expenditure[11]. This situation is partially explained by the fact that the lower importance of expenditure on food and drink (from representing 72.6% of income to a 15.4%) is not translated substantially into more expenditure on communications, as happens in the other countries, but rather into other areas of expenditure, such as 'other expenditures' and 'rent and home improvements'.

The regression analysis shows that in the case of model I for Nepal, as happened in Albania and Mexico, the location of the household does make a significant difference in the percentage devoted to communications by members of the households. As can be seen in table 9, the location of the household in an urban environment means almost a doubling in expenditure in communications, from representing 1.4% of the

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[10] A parallel analysis of the Nepalese data showed that overall 43% of rural Nepalese without a home phone had non-zero communications spending. However this percentage rose to 52% for those within a 30 minute journey of a phone booth and fell to 31% for those whose journey to a phone booth was two hours or more.
[11] The parallel analysis referred to suggests that total communications spending could more than double if everyone had access to phones.

total expenditure in rural areas to 2.3% in urban ones. Then for people living in cities (only 13% of the total population of the country, as we saw in table 7) communications expenditure tends to occupy a much bigger place than for the ones in rural areas, for whom this kind of expenditure is almost non-existent[12]. This relevance of location does not change substantially in models II and III, while the gender and the age of the head of the household appear as not important. Finally it is relevant to note, in model IV, that in Nepal an urban location is still a very influential factor in the expenditure on communications when the education of the head of the household is introduced in the regression model.

Table 8. Percentage of expenditure by groups of items by deciles of expenditure Nepal 2002/03

	Deciles of Monthly Expenditure										Total
	I	II	III	IV	V	VI	VII	VIII	IX	X	
Food and Drinks	72.6%	69.9%	68.2%	65.6%	62.1%	55.9%	50.6%	42.7%	31.3%	15.4%	31.6%
Rent and home improvement	1.3%	2.2%	1.6%	3.0%	2.5%	4.4%	8.1%	6.7%	13.8%	24.7%	16.2%
Water, gas, combustible	2.2%	1.2%	1.2%	1.1%	1.2%	1.3%	1.2%	1.1%	0.9%	0.4%	0.8%
Public transport	0.5%	0.4%	0.5%	0.7%	0.7%	0.7%	0.8%	0.8%	0.7%	0.5%	0.6%
Home maintenance	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%
Personal care	0.6%	0.4%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.3%	0.2%	0.3%
Education	0.5%	0.6%	0.9%	1.0%	1.2%	1.3%	1.2%	1.9%	1.9%	2.2%	1.8%
Newspaper, books, CDs	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Entertainment	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Communications	**0.7%**	**0.9%**	**1.3%**	**1.2%**	**1.5%**	**1.7%**	**1.9%**	**2.2%**	**2.3%**	**1.4%**	**1.6%**
Clothing and shoes	2.1%	3.1%	1.9%	2.3%	2.5%	2.3%	2.6%	2.0%	1.5%	1.0%	1.5%
Domestic goods	4.4%	4.8%	4.6%	4.4%	4.0%	4.0%	4.0%	3.7%	3.6%	2.2%	3.1%
Health	1.6%	1.7%	1.9%	1.8%	2.5%	2.8%	2.1%	2.3%	2.2%	1.8%	2.0%
Domestic technologies	0.0%	0.1%	0.1%	0.1%	0.1%	0.4%	0.5%	0.6%	0.5%	0.4%	0.4%
Furniture	0.0%	0.0%	0.1%	0.2%	0.5%	0.5%	1.2%	1.0%	1.5%	1.1%	1.0%
ICTs	0.2%	0.4%	0.8%	0.6%	1.1%	1.3%	1.5%	2.4%	3.3%	2.7%	2.4%
Games & toys	0.1%	0.1%	0.1%	0.2%	0.1%	0.2%	0.4%	0.4%	0.4%	0.2%	0.3%
Travel/tourism	0.1%	0.0%	0.2%	0.4%	0.5%	0.6%	0.9%	1.1%	1.3%	1.3%	1.1%
Fuel and vehicle maintenance	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.2%	0.4%	1.0%	1.5%	1.0%
Other expenditures	13.1%	13.9%	16.1%	16.8%	18.6%	21.8%	22.3%	29.9%	33 %	42.6%	34.1%
Communications *	20	38	77	88	139	193	274	469	786	1347	341
Total *	2470	4371	5845	7441	9239	11621	15035	21145	34184	111581	22281

Source: own calculations based on the data of the Nepal living standards survey 2002-2003 (CBS 2004)
* In local currency

In clear contrast to the others countries analysed here, in Nepal an urban location is always central to the percentage of spending devoted to communications. This is because in this country

> "The distribution of telecommunication services, however, shows a clear urban bias. While 20.2% of urban households have television sets, the rural areas account for only 1%. The national ratio of 14 telephones per 1,000 people still concentrates largely on towns and cities; 55% of the Village Development Committees (VDCs) still have no telephone facilities … Moreover, the allocation of funds during the last years indicates low priority to rural telecommunication services" (UNDP 2004:40)

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[12] Something that is probably influenced by the distance that they have to cross in order to access public payphones. As further analysis on Nepal NLSS2 has shown "more than half of the households of the first and second poorest quintiles of the populations, mostly rural, have to travel more than half an hour to reach the nearest payphones, but "if phone booths were easily accessible to all at current prices, it is estimated that total spending at them would more than triple".

In this context it is not surprising that location is always an influential factor, despite the other variables that we introduce in the regression model, even ones that could be much more directly related to income such as the level of education of the head of the household.

Table 9. Non-standardized coefficients of regression percentage of expenditure on communications in Nepal 2002-2003

		I	II	III	IV
Constant		1.4 **	1.72**	1.67**	1.64**
		[0.05]	[0.12]	[0.17]	[0.17]
Location	Urban = 1	0.93**	0.94**	0.94**	0.65**
		[0.2]	[0.2]	[0.2]	[0.21]
Sex of head of the household	Male = 1		-0.396*	-0.4*	-0.37
			[0.13]	[0.14]	[0.14]
Age head of household	40 to 59 years = 1			0.03	-0.04
				[0.15]	[0.15]
	Over 60 years = 1			0.11	0.07
				[0.01]	[0.15]
Education head of household	Some formal education				1**
					[0.2]
R²		**0.005**	**0.007**	**0.008**	**0.013**
Observations		**3771**	**3771**	**3734**	**3593**

Note: ** indicates a correlation at .001 significance level.
Note: In parenthesis is the standard error.

1.4. South Africa (2000)

Finally, the available data for South Africa locates it more or less in the middle of the countries considered in this study. With a GNI per capita of $2,750 it stands well above Albania and Nepal, even though it still has 34% of its population living on less than $2 per day. This last point can be explained by the high levels of inequality in the distribution of income, the highest of the four countries, with a Gini index of 59.3, which means it ranks among some of the most unequal income distributions in the world (UNDP 2004).

Table 10. General and ICTs indicators for South Africa

General Indicators 2003-2005			ICTs indicators 2003-2005		
Population (millions)		46	Fixed telephones	Per 1000 people	107
% of population urban		59%		Cost of a call in $ per 3 minutes	0.15
Gross national income per capita	$ 2003	$2750		Waiting list (thousands and as % of total lines)	50 (1%)
	Rank 2003	94	Mobile phones (Per 1000 people 2003)		364
	PPP	$10.960	Personal computers (Per 1000 people 2003)		72.6
Population below $2 a day		34.1%	Internet	(Users per 1000)	68
Human development rank		120	Internet monthly price	20 hours of use	U$ 33
Gini Index		57.8		% of monthly GNI per capita	15.4

Sources: World Development Indicators (WB 2005b), Human Development Report (UNDP 2005).and ICT at a Glance South Africa (WB 2003)

This high level of inequality in the distribution of income is reflected in the access to fixed telephony.

> "Despite significant gains over the last five years, the distribution of telephony service in South Africa continues to reflect the highly uneven development of the infrastructure of the past - with 18 per cent of black households and 82 per cent of white households having telephony service. Universal access, measured as a 30 minute walk to the nearest phone has increased dramatically with over 80 per cent of all households having access. South Africa has over 100'000 public pay phones distributed nationally. While the positive effect of policies to bridge this gap are beginning to be evident, the differentiation in access and services between rural and urban households remains high - with 64 per cent of urban households and only 9 per cent of rural households [having access to landline services]" (ITU 2001) 5.

In recent years this lack of fixed telephone availability has been partially alleviated by the massive access to mobile phones with the result that "46.9% of households in South Africa have access to telecommunications, both fixed and mobile" (Gillwald 2005:8); although this figure "is lower than the average for other lower middle income countries with average household penetration of 49.4%" (ibid.). Even more important,

> "Of the 32% of the population with mobile phones, 14% also have access to a fixed phone, suggesting that while mobile telephony offers convenience and additional utility it has only extended access to a further 18% of the population. While this is significant more than 68% continue not to own phones. In this regard South Africa compares poorly with other lower middle income countries" (Gillwald 2005:29).

In relation to computers and the Internet, as we can see in table 10, this country, along with Mexico, has some of the higher indicators on access to computers, with 72.6 computers per 1000 inhabitants. But this relatively high access to computers is not reflected in access to the Internet, at least in comparison with Mexico, with only 68 users per 1000 inhabitants against 118 in that country[13].

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[13] This fact can be explained partially by the observation that, along with the lack of infrastructure in rural areas, when it is available "the cost of ADSL in South Africa is 139% more expensive than the average price out of [other comparable countries in terms of communication costs]" (Gillwald, et al., 2005:10).

Chart 4. Scatter plot and linear regression of communication expenditure per total monthly expenditure in South Africa
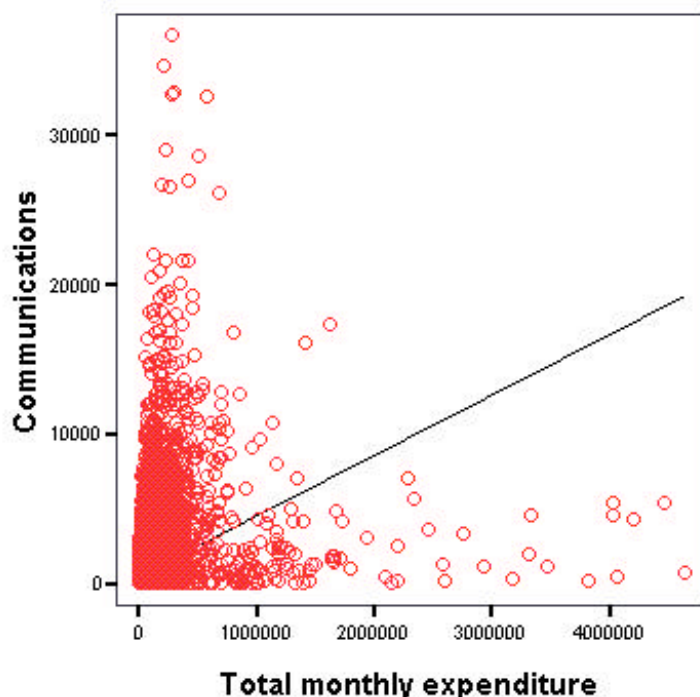
Note: expenditure expressed in local currency

Again we see a very high scatter and low R-square of the regression (0.09). In this case it may be explained by the actual distribution of communications spending being bimodal.

In terms of the distribution of expenditure on communications by the different expenditure groups, table 11 shows that the general tendencies are more or less the same as in the case of the other countries under study. First, we can note that there is an increase in the percentage of general expenditure being devoted to communications as the general expenditure of the family increases but - as in Mexico - this increase reaches its maximum at the IX decile and then declines by more than half for the decile of highest expenditure. Again the majority of the reduction in the percentage devoted to food and drink is absorbed by expenditures in both the categories 'rent and home improvements' and 'other expenditures'.

**Table 11. Percentage of expenditure by groups of items by deciles of expenditure
South Africa 2000**

| | Deciles of monthly expenditure | | | | | | | | | | Total |
	I	II	III	IV	V	VI	VII	VIII	IX	X	
Food and drinks	57.5%	58.8%	54.7%	49.5%	46.8%	42.6%	37.5%	33.1%	25.3%	7.2%	18.2%
Rent and home improvements	3.1%	3.1%	4.0%	4.7%	5.0%	5.5%	5.8%	7.2%	10.7%	31.6%	22.7%
Water, gas, heating combustible	9.7%	9.5%	9.4%	8.9%	8.5%	8.1%	7.2%	6.7%	5.9%	2.2%	4.1%
Public transport	2.8%	2.9%	3.2%	3.8%	4.1%	4.4%	4.1%	3.8%	2.5%	0.4%	1.5%
Personal care	6.7%	6.1%	5.8%	6.0%	5.7%	5.5%	5.2%	4.8%	4.2%	1.3%	2.7%
Education	1.8%	1.6%	1.7%	1.7%	1.8%	2.0%	2.5%	2.8%	4.1%	1.9%	2.3%
Communications	**0.4%**	**0.6%**	**0.8%**	**1.0%**	**1.2%**	**1.5%**	**1.7%**	**2.1%**	**2.5%**	**1.2%**	**1.4%**
Clothing and shoes	4.1%	5.4%	5.5%	6.4%	6.5%	6.8%	6.7%	6.7%	5.5%	1.5%	3.2%
Domestic goods	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.7%	0.2%	0.4%
Health	1.4%	1.0%	1.2%	1.2%	1.3%	1.6%	2.0%	3.3%	4.5%	2.4%	2.6%
Domestic technologies	0.2%	0.3%	0.4%	0.6%	0.9%	1.1%	1.3%	1.3%	1.2%	0.4%	0.7%
Furniture	0.2%	0.3%	0.5%	0.9%	1.0%	1.4%	1.9%	1.9%	1.9%	0.6%	1.0%
ICTs	0.1%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.4%	0.6%	0.4%	0.4%
Car, bike, etc.	0.0%	0.1%	0.1%	0.1%	0.2%	0.2%	0.5%	1.0%	2.2%	2.8%	2.2%
Fuel and vehicle maintenance	0.1%	0.1%	0.2%	0.3%	0.5%	0.8%	1.5%	2.5%	5.3%	3.6%	3.2%
Other expenditures	11.2%	9.3%	11.6%	13.8%	15.2%	17.2%	20.5%	20.9%	22.3%	41.7%	33.5%
Communications *	12.9	36	58.9	101.1	153.7	244.4	379.3	658.1	1293.7	3267	620.5
Total *	3098	5545	7441	9789	12525	16270	21784	30867	51981	269570	42887

Source: own calculations based on data from the Income and Expenditure Survey 2000 (SSA 2000)
* In local currency

The regression analysis[14] shown in table 12 indicates that the case of South Africa is similar to that of Mexico and Albania. As we can see in model I, urban location of the household is crucial for expenditure on communications, more than doubling it from 0.83% of general expenditure to a 1.78% share. The second model shows that the sex of the head of the household does not have a significant impact on the percentage of expenditure devoted to communication, while location maintains its importance. Finally, in model III we see that while location is still a central determining factor for expenditure, sex and age of the head of the household are also important. It is only in the case of households in which the head is more than 60 years old that this impact is more important, contributing 0.52% to the increase in the expenditure on communications.

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[14] In this case, there are only three models due to lack of data for the variable indicating education in the original data set.

Table 12. Non-standardized coefficients of regression percentage of expenditure on communications in South Africa 2000

		I	II	III
Constant		0.83**	0.79**	0.57**
		[0.24]	[0.29]	[0.03]
Location	Urban = 1	0.95**	0.94**	0.99**
		[0.31]	[0.03]	[0.03]
Sex of head of the HH	Male = 1		0.73	0.12**
			[0.03]	[0.32]
Age head of HH	40 to 59 years= 1			0.13**
				[0.03]
	Over 60 years = 1			0.52**
				[0.04]
R²		**0.035**	**0.035**	**0.041**
Observations		**26262**	**26252**	**25895**

Note: ** indicates a correlation at .001 significance level
Note: In parenthesis is the standard error

2. Comparisons between countries

After reviewing the results for each country separately, in this section the results for the four countries are compared to establish general trends and to generate hypotheses about expenditure on communications. Chart 5 shows a comparison between the variations in the percentage of expenditure that families devote to communications in terms of the different deciles of expenditure for the four countries. Generally speaking, they all follow the same pattern: as households spend more, consumption of communications occupies a larger proportion of general household expenditure.

Chart 5. Expenditure on communications as a percentage of total expenditure
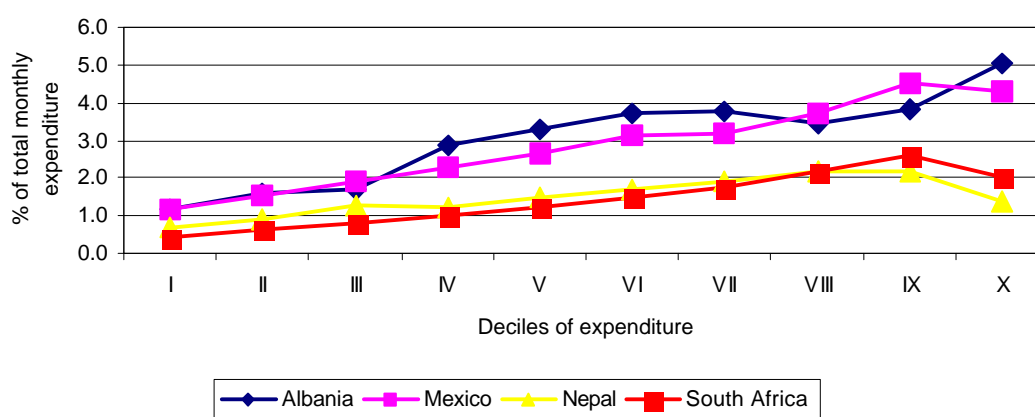
It is also interesting to note that while in Albania more expenditure always means a higher percentage devoted to communications, in the case of Mexico, Nepal and South Africa, the percentage of expenditure devoted to communications reaches its maximum at the IXth decile and then declines in the last decile - the 10% of highest levels of expenditure. This situation intuitively seems to echo the one that we find in industrialised societies, as we will see, but further specific research into the consumption patterns of this segment of the population would be needed to clarify this point.

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Table 13 shows the Pearson correlation coefficient[15] for expenditure on communications and the other areas of expenditure for the four countries. The first thing to note is that there is a strong negative relationship between expenditure on communications and food and drink consumption (above –0.2 in all the countries under study). As the first row shows, for these four countries expenditure on food and drink is always negatively significant for expenditure on communications. This relationship is graphically presented in chart 6. In all four countries, an increase in the general expenditure of the household always results in a decrease in the relative importance of food and an increase in the importance of communications, except on decile 10. In economic terms, this change can be interpreted as the two areas of expenditure having different income elasticities. Income elasticity can be defined as "a measure of the responsiveness to the quantity demanded of any good to a change in the level of income of the persons" (Hamill 2000). If, with an increase in total income of the household, the percentage of income devoted to a given good increases to a higher level (e.g. an increase in 10% of income means an increase of 15% in travel expenses) its elasticity is positive and we can say that the good is a luxury good. On the other hand, if the increase in the percentage devoted to a good is lower than the general increase (e.g. an increase of 10% of income means an increase of 2% in clothing) its elasticity is negative and we can say that we are dealing with a necessity good[16].

Table 13. Pearson correlations among percentage of expenditure on communications with all other expenditures by country

	Albania	Mexico	Nepal	South Africa
Food and Drinks	-.285(**)	-.269(**)	-.075(**)	-.210(**)
Rent and home improvement	-.135(**)	.025(*)	-.068(**)	-0.001
Water, gas, combustible	-0.006		.036(*)	0.009
Public transport	-0.041	-.048(**)	.086(**)	.014(*)
Home maintenance	-.088(**)	-.054(**)	.082(**)	.020(**)
Personal care	.049(*)	-.063(**)	.119(**)	-.027(**)
Education	0.032	-0.016	.060(**)	.027(**)
Newspaper, books, CDs	.111(**)	.087(**)	.085(**)	.077(**)
Entertainment	0.022	.106(**)	.033(*)	.068(**)
Clothing and shoes	0.013	-.044(**)	-0.002	.013(*)
Domestic goods	-0.03	-0.012	-0.005	-0.01
Domestic technologies	-0.022	0.01	0.026	.034(**)
Furniture	.134(**)	-0.016	-0.004	-0.004
ICTs	.051(*)	-0.001	-0.005	.099(**)
Games & toys	.057(*)	0.015	.071(**)	.069(**)
Travel/tourism	.087(**)	.025(*)	.068(**)	.025(**)
Fuel and vehicle maintenance	0.029	.113(**)	.074(**)	.182(**)
Other expenditures	-0.024	0.009	-.053(**)	-.072(**)
N	1780	10079	3906	26263

Note: ** Correlation is significant at the 0.01 level (2-tailed).
       * Correlation is significant at the 0.05 level (2-tailed).

In the case of food, Engel's law appears to be operating here. This law states that "for any given household composition, Engel's law implies that there is a negative relationship between the food share and the total expenditure" (Deaton 1997), so the

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[15] Pearson correlation shows the degree of linear relationship between two variables. It ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between variables. A correlation of -1 means that there is a perfect negative linear relationship between variables.
[16] It is important to keep in mind here that these are strictly economic definitions of 'luxury' and 'necessity' which do not necessarily match common sense understandings of them.

increase in one implies a decrease in the other. In other words, more expenditure always means lower relative importance of food in the general family budget, because food is obviously a necessity. In the case of communications the situation is different, because, for all the countries under study, more general expenditure means a greater relative importance of communications. Thus expenditure on communications in these countries has to be seen as a luxury; goods on which families spend money only if their basic needs (such as feeding and shelter) are already fulfilled. In the case of South Africa, Nepal and Mexico, we may be seeing this 'luxury' status of communication expenditure starting to diminish, becoming something necessary, when a certain level of expenditure is reached but further research would be needed to clarify this point.

Another interesting point is the positive relationship that expenditure on communications has with both 'travel and tourism' and with 'newspapers, books and CDs. In the first case, the correlation coefficient is as expected due to the fact that travel and tourism always imply a distance from the place of origin, a distance that can be 'bridged' through the use of communications technologies such as the telephone and the Internet. In the second case, it is interesting to see how the consumption of traditional media such as books and newspapers is related to the consumption of 'new' media such as mobile phones and the Internet, illustrating that there is certain continuity between the users of both types of media.

Thirdly, it is interesting to note that expenditure on communications is not strongly related to two categories of expenditure where such a relationship might be expected: the use of public and private transport and expenditure on ICTs. In the first case, theoretically we might expect a negative correlation between the uses of public and private transport and communications given the idea that 'virtual' mobility enabled by the use of communications technologies allows people to save on the cost of travel. In practice, there is a negative relationship in relation to the use of public transport in Albania and Mexico, although not very strong, while in the case of Nepal and South Africa, both expenditures appear to be correlated positively with expenditure on communications. This fact seems to suggest that there is no evidence here to support the idea of a clear replacement between virtual, or communicative, mobility and physical mobility, something that has been recognised by the literature in the field of mobility (Boden 1994; Urry 2002).

In terms of expenditure on ICTs, the positive relationship that we might expect between this variable and expenditure on communications - considering that in order to spend on communications we first have to have access to ICTs - only appears to be relatively strong in the case of South Africa (.099) and it is quite weak in Albania, while in Mexico and Nepal there is no relationship whatsoever. This result suggests that in the case of developing countries the use of ICTs does not necessarily imply the purchase of technologies for private use such as home computers or personal mobile phones, but instead the use of public devices such as cyber cafes or public payphones, as several studies have shown (for some examples see Bertolini 2002; Miller 2000; Slater 2005). Also, ICT expenditure may well include devices like TVs, video players, etc. which entail little or no continuing outlay after they have been acquired.

Chart 6. Variation of expenditure on food and drinks and communications in relation to deciles of expenditure.

Albania

Mexico

Nepal

South Africa
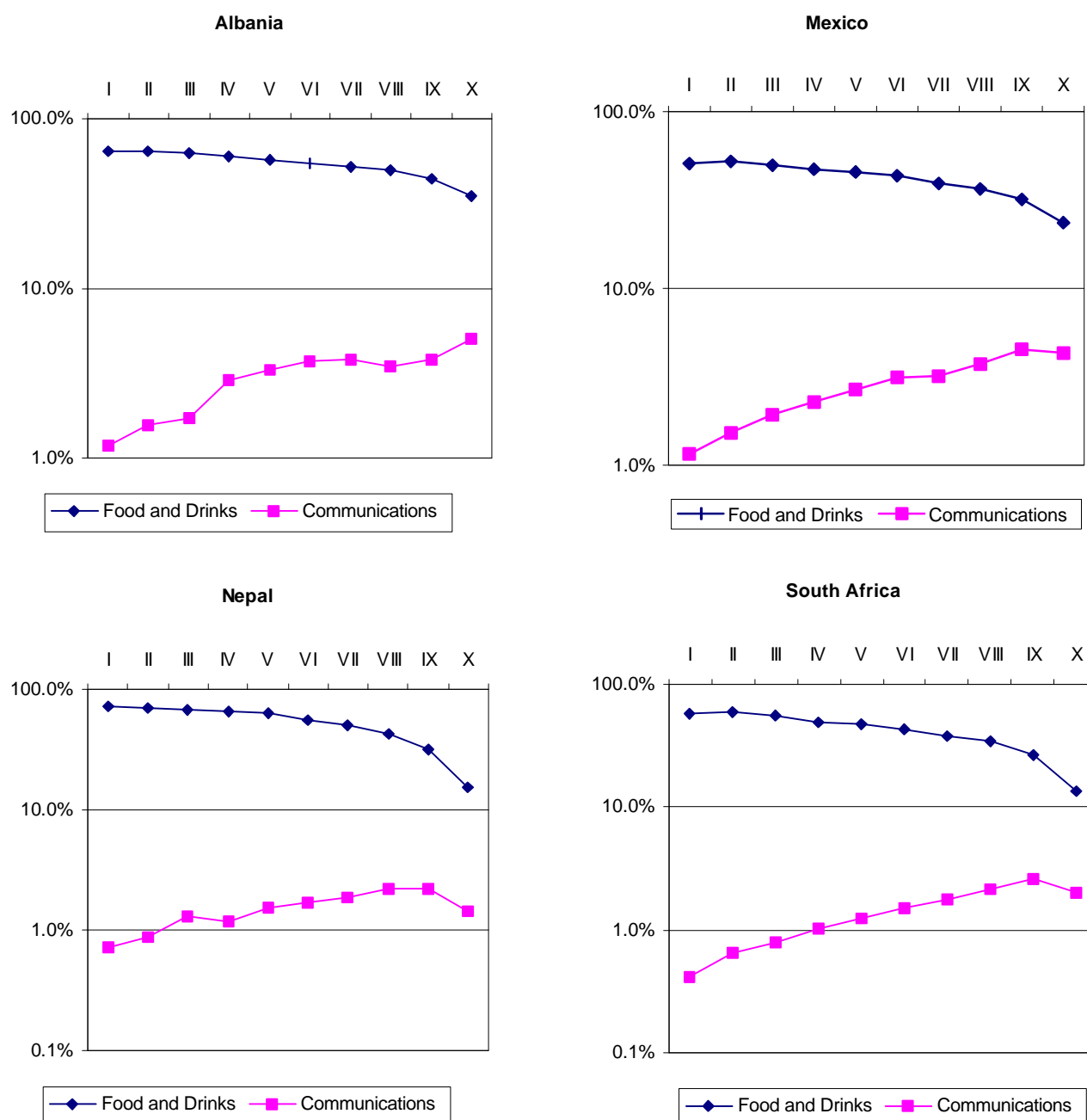
Fourthly, there is a general point to make regarding the high degree of variability of the results. Apart from the significance of the correlation results (or the lack of them) indicated above, the expenditure data on communications and its relationship with other areas of expenditure shows high degrees of variation, and even contradictions, from one country to another. In each social setting the use and impact of communications technologies are different and have to be studied as a whole if we want to fully understand the social phenomena surrounding communications technology use in developing countries.

Chart 7. Expenditure on communications as a percentage of total expenditure (comparison with industrialised countries)
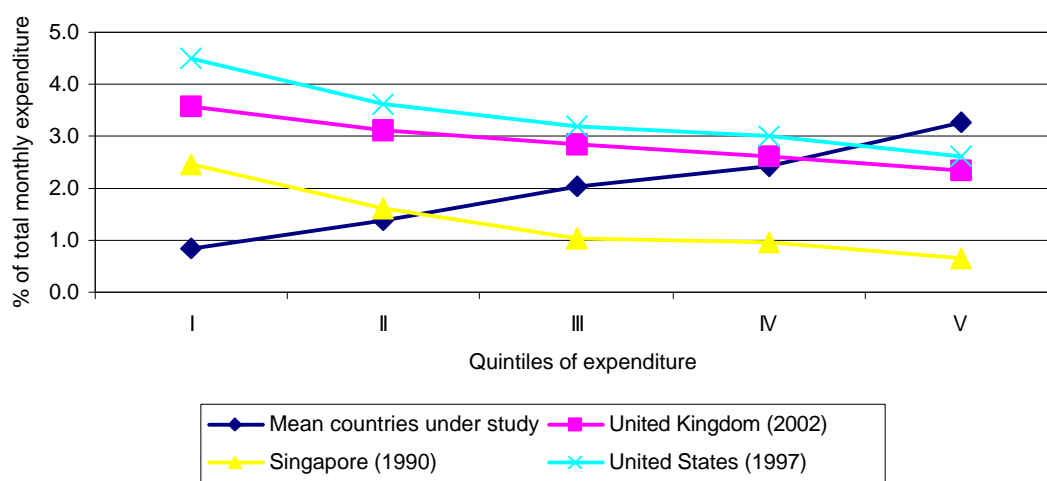
Finally, in order to consider the results for the four countries in a general context, chart 7 shows a comparison fn the expenditure on communication by quintiles of expenditure for the mean of the countries under study and three industrialised societies; the United Kingdom, Singapore and the United States. As can be seen the variations in the levels of expenditure on communications in the countries follow the opposite trend to those in the industrialised societies. While in the first set of countries more overall expenditure is always associated with a greater relative importance of communications, in the industrialised societies the trend is toward decreasing importance of communications in the general expenditure of the household. Following the analysis presented with respect to food, communications expenditure in the industrialised countries seems to be much more of a necessity than in the case of the four countries examined here. In general, these different income elasticities indicate how - in an international context - expenditure on communications does not have a linear pattern, but instead its elasticity changes from positive to negative at a certain point in the development of societies. Finally, it is important keep in mind that this change in the income elasticity of consumption does not mean that the populations of industrialised societies spend less money on communications. In fact, absolute statistics show exactly the opposite; at least in the member countries of the OECD (Paltridge 2003). It is just that the place that this consumption occupies in general expenditure is smaller. Also, this analysis of data for OECD countries suggests that the percentage of income devoted to communication has been increasing over time, even though it decreases with income.

Conclusions

There are several conclusions that we can extract from the analysis of expenditure data presented here. In the first place, and in relation to the place of communications among other types of expenditure, we have to treat the results shown here with caution. Especially in the case of expenditure on food and drink, the observation that communications expenditures have a negative relationship with this variable does not mean that families are spending less on food or drink in order to have money to spend on communications. The analysis of the absolute values presented in charts 1 to 4 shows that the reality is the opposite. Families with more expenditure do spend more in most of the areas of expenditure, included food and drink *and*

communications; not the other way round. What changes is the relationship between expenditure categories, not the absolute amount of money devoted to them.

In this sense, the decrease in the relative importance of expenditure on food and drink is only an indicator of a change in the general patterns of consumption when there is more money available. Here it is interesting to note that, as we saw in the case of income groups with higher expenditures and in the case of industrialised countries, after a certain point, the proportion of expenditure on communications starts to fall as expenditure on food and drink falls as well. What is interesting to note is the continuity that exists between different types of expenditure.

Expenditure on communications does not constitute a completely different kind of expenditure, but forms part of the system of products and services on which families and individuals use their incomes in everyday life. While food and drink constitutes a primary necessity, communications can be seen as a second order necessity, followed by other secondary and tertiary needs, which start to become important in terms of their contribution to expenditure when the expenditure of the families becomes higher. The results highlight the relevance of understanding access to communications in contemporary society not as a luxury or something superfluous, but as a need among other needs. Even in the poorest societies, as we see in the case of Nepal, families devote a certain part of their income to communications, because using them forms a compulsory part of what it means to live in contemporary societies.

Chart 8. Hypothetical variation of the percentage of expenditure on communications by expenditure percentiles when several countries of varying levels of prosperity are grouped together[17]
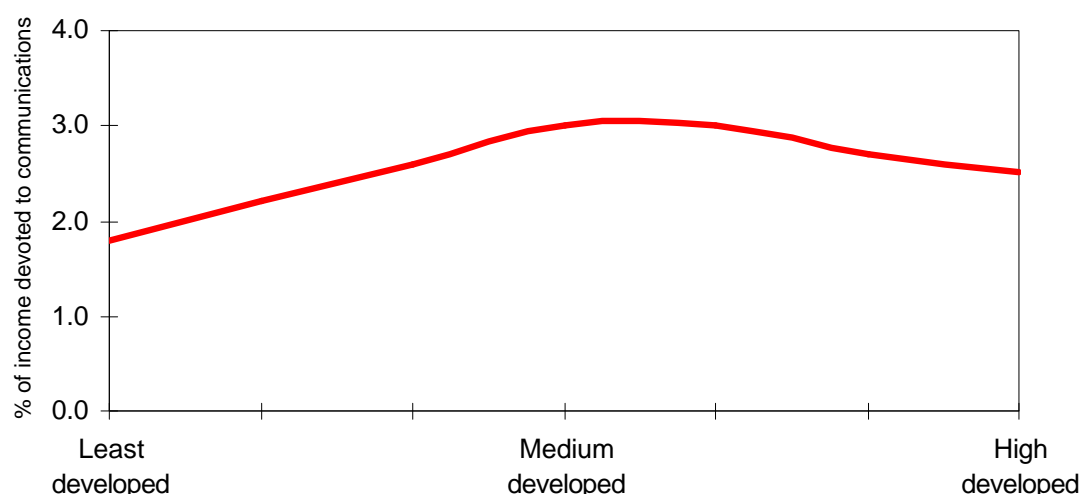
Along with this - and applying this idea to the international context - we might imagine that the relative significance of expenditure on communications in relation to the level of development of a country might follow a pattern similar to the one shown in chart 8. After a first stage in which expenditure on communications has a positive elasticity (i.e. that the relative importance of communications in general expenditure seems to

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[17] It is important to take into consideration here that the scale on the Y axis is only indicative only and does not represent any necessary correlation with reality. Also the whole curve may be rising over time, as happened in the OECD countries, as we mentioned before.

increase with improvement in the well-being of the population) there is a point at which the opportunity cost of using a higher percentage of income on communications becomes larger than its benefits (a saturation point is reached). After this, the elasticity of expenditure on communications becomes negative and any improvement in the expenditure of the household only means that the relative importance of communications is reduced, but that it remains comparatively stronger than in the case of the least developed countries. Even though this idea is only suggestive, more international comparative research, especially between patterns of consumption of developing versus developed countries, would be needed in order to demonstrate its validity in an empirical context.

If the aim is to determine what characteristics the household expenditure on communications depends upon, we have to look mainly outside the field of consumption as such. As we saw in the regression analysis results, apart from total consumption there are two key variables that are reasonably good predictors of the amount that families spend on communications: the location of the household and the level of education of the head of the household. With respect to the first point, it is interesting to note that despite the great advances in mobile communications technologies (especially mobile phones), the strong connection between an urban environment and use of communications technologies still persists. There are many reasons for this including the difficulties of access to these services in rural areas and the generally poorer financial condition of rural inhabitants in relation to those in the cities. Still, even in countries with relatively good access to mobile phones such as Albania and South Africa, being located in an urban setting seems to indicate more regular use of the means of communication. With respect to the second point, the relationship is much clearer, because better education means better income and having the intellectual tools to use more complex communications technologies such as computers and the Internet, which requires a certain level of literacy.

Finally, the variations in the results between countries show us that in addition to the broad generalizations that can be made about the nature of communications expenditure in developing countries, to acquire a deeper understanding of the phenomena informing the use of communications technologies in developing countries we will have to study each country in depth. Each socio-cultural environment implies different opportunities and constraints for communications technology use and its impact on human development.

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