

The Determinants of ICT Expenditures by Households: a Micro Data Analysis¹

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Abstract

This paper examines the determinants of ICT expenditures in 17 OECD countries, including the Czech Republic, looking at Household Expenditures Surveys data. Previous OECD work has shown that average ICT expenditures vary with the gender and the educational attainments of the family head and with the lifecycle and the income of the household. Average data, however, hide the interactions among these factors that occur at the level of households. In order to control for these interactions, this paper analyses the determinants of ICT expenditures based on the household-level data (micro data).

Using a double-hurdle model (a probit model to estimate whether a consumer will spend on a certain good or service or not, followed by a truncated regression model that estimates how much to spend on that good or service) applied on micro data collected by households budget surveys from 16 OECD countries, the paper analyses the effects of determinants on ICT expenditures. The paper shows that the effects of various determinants between communication services and information technology goods are markedly different. Some determinants, in particular income and presence of children, have significant and relatively similar effects, at the level of more elementary expenditures components (IT goods, IT services, communication goods and communication services). It also shows that the effects of other determinants (such as education level, geographical area, age, or life cycle stage) are less similar across countries or between ICT goods and services.

Keywords

ICT expenditures by households, determinants, micro data analysis

JEL code

D12, C81, O33

INTRODUCTION

Over the last decade, there has been a clear increase in household ICT expenditure, as well as the ICT budget coefficient (OECD, 2007). It has also been observed that ICT consumption is affected by

¹ Disclaimer: the opinions expressed and arguments employed in this paper do not necessarily reflect the official views of the Organisation or of the governments of its member countries. An earlier version of this paper has been presented at the OECD's Working Party on Indicators for the Information Society at its April 2009 meeting.

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the level of household income, with low-income households spending proportionally more on ICT than high-income households. In addition, low-income households tend to devote a higher share of their ICT expenditure to ICT services compared with high-income households. Following on from these observations, the use of micro-data would make it possible to account for all the determinants of ICT expenditure.

Yin et al. (2005), in one of the few analyses of the impact of the socio-economic factors on ICT expenditure, explored some of the determinants of household expenditure on computer hardware and software. They used the US Bureau of Labour Statistics 2000 Consumer Expenditure Survey (CES) micro-data, applied to the double-hurdle model proposed by Cragg (1971), to analyse consumers' expenditure on durable goods.

Likewise, the present paper is based on micro-data collected by the household budget surveys from selected OECD countries, and using the double-hurdle model, constitutes an initial attempt to shed light on some determinants of household expenditure on ICT goods and services.

1 RESEARCH QUESTIONS, METHODOLOGY AND DATA

1.1 Research questions

Most of the literature concerning the diffusion and use of ICT among households refers to determinants of equipment and use, and tends not to focus specifically on ICT expenditure.

As pointed out by Yin et al. (2005), since most consumers buy computers for self-use, computer ownership can be assumed to be equivalent to computer spending behaviour. For the household, it can be similarly assumed that most of them buy ICT goods and services for self-use. The main determinants on ICT expenditure, although not necessarily the same, should be closely related to those on equipment and use.

For ICT equipment and use, the literature usually focuses on income, age, education, occupation, gender (Bigot, 2006, McKeown et al., 2007, OECD, 2007), marital status and children and, less frequently, on specific variables linked to literacy (Veenhof et al., 2005), cultural capital or attitudes (CERI, 2009, Horrigan, 2007). Some of those determinants are clearly associated with the life cycle stage of the household. The age of the household's reference person, marital status, and presence of children have been frequently used to identify the life cycle stages.

Based on examination of the data on computer ownership, Yin et al. (2005) suggested four groups of households: married with children, married without children, single persons, and others (single parents and other types of households). They also suggested a negative quadratic relationship between age of the household's reference person (positive for age and negative for age-squared) and both the probability of spending and the amount spent.

Income is also one of the important determinants of the household expenditure as generally, the more income a household has, the more goods or services it can afford to purchase. The relationship between income and many types of expenditures has been found to be positive. Computer ownership and Internet access rates are positively related to income. Income is expected to influence positively expenditure on ICT goods and services.

Education may be another factor that affects ICT expenditure. Computer and Internet use are influenced by the level of education of the household's reference person (OECD, 2007). Differences in ICT use and familiarity according to education level have been also pointed out in many countries (Veenhof et al., 2005). US studies (Yin et al., 2005) have shown, for instance, that health and personal care expenditure is positively related to the level of education of the household's reference person. Reading material and occupational expenses are also positively related to the level of education of individuals. We can assume a positive relationship between education and spending on ICT goods and services.

Geographical area may be another factor that affects ICT expenditure. Several indices show that Internet access and use, and mobile access and use, are relatively heterogeneous according to where the household is living. A rural location remained one of the barriers to Internet use in Canada in 2005 (McKeown et al., 2007). In France, in 2006, computer equipment and frequency of use, mobile equipment, use of SMS, Internet access and frequency of use all differed greatly according to the population density of the place of residence (CREDOC, 2007). We can assume a positive relationship between the level of the population density and spending on ICT goods and services.

Many factors impact women's access to and use of ICT, including ICT infrastructures, social norms, time-budget allocation, education, employment, and available content and cultural constraints. Many studies have found gender differences in patterns of computer and Internet use (Veenhof et al., 2005, Montagnier and Van Welsum, 2006). Attitudes toward technology are also not the same according to gender. At the beginning of the 2000s, US female-headed households were found to be less confident about information technology than male-headed households (Yin et al., 2005). It can be expected that gender will have a similar effect on ICT purchase and the amount spent.

From the above, we can formulate the following hypotheses:

Life cycle stage | Households whose reference person is married without children are less likely to spend on ICT than households whose reference person is married with children.

Of households that spend on ICT, households whose reference person is married with children are likely to spend more on ICT than households whose reference person is married without children.

Age | A positive relationship between the household reference person's age and the likelihood of spending on ICT is observed. There is a negative relationship between age-squared and the likelihood of spending on ICT.

Of households that spend on ICT, the effect of age on amount spent is positive and negative for age-squared.

Income | There is a positive relationship between household income and the likelihood of spending on ICT. Of households that spend on ICT, the effect of income on amount spent is positive for income.

Education attainment | Households whose reference person has a low level of education are less likely to spend on ICT than households whose reference person has a high level of education.

Of households that spend on ICT, households whose reference person has a low education are likely to spend less on ICT than households whose reference person has a high level of education.

Density of population (or rural and urban) | Households whose reference person is resident in a rural — or low densely populated — region are less likely to spend on ICT than households whose reference person is resident in an urban — or highly densely populated — region.

Of households that spend on ICT, households whose reference person is resident in a rural — or lowly densely populated — region should spend less on ICT than households whose reference person is resident in an urban — or highly densely populated — region.

Gender | Households with a male reference person are more likely to spend on ICT than households with a female reference person.

Of households that spend on ICT, households with a male reference person are likely to spend more on ICT than households with a female reference person.

1.2 Methodology

In expenditure studies, and this is especially valid for durable goods, it is common for a large number of households not to have purchased anything in a particular category during the survey period. In this case, the dependent variable will be zero for a significant number of observations, and no conclusion can be drawn for the population as a whole. In econometrics, this is referred to as the limited dependent variable problem. In order to take into account this bias, Cragg (1971) proposed a double-hurdle model: it is made first of a probit model, which estimates whether a consumer will spend on a certain good or not, and second of a truncated regression model, in order to estimate how much to spend on that good. The regression model takes into account the selection bias and incorporates it into the regression, so that the results yield for the population as a whole. This correction is known as the Heckman correction, or two-stage method (Heckman, 1979). Due to the “truncated” nature of the dependent variable, the traditional estimation method of OLS (Ordinary Least Square) is not appropriate and the maximum likelihood estimation method is used instead.

Dependent variables

Probit and truncated regression models have been estimated for information and communication expenditure with various combinations of information technology and communication goods and services (see definitions below).

The dependent variable in the probit model is whether to spend on ICT goods and services (and various combinations). It is coded 1 if the household spent on ICT, and coded as 0 otherwise.

The dependent variable in the truncated regression model is the logarithm of the amount spent on ICT goods and services (and various combinations). If there is no selection effect, the simple OLS model is used instead of the Heckman correction for the regression.

Independent variables

Following the approach from Yin et al. (2005), a simple model has been developed and tested in order to see the influence of the main socio-economic factors of households on their ICT expenditure.

According to the research questions mentioned above, income, age, life-cycle stage, education level of the household's reference person, geographical location and gender of the household's reference person should have significant influence on both the probability of spending on ICT goods and services and the level of ICT expenditure.

1.3 Data sources

Data are from the household's budget surveys. For the European countries (except Czech Republic), data are from the Eurostat Database on Household Budget Survey, and refer to the latest collection round in the reference year 2005.

For European countries (except Czech Republic), the authors did not have direct access to the micro-data. Eurostat provided the OECD with an initial sample of data with the selected variables. This sample was used by the OECD to prepare a SAS programme. This programme was then implemented and applied to the micro-data by Eurostat⁴ and the aggregated results provided to the OECD. It was therefore only possible to test the assumptions through a limited number of interactions.

For Canada, the data come from the Survey of Household Spending (SHS), and for Czech Republic and Switzerland, the data come from the Household Budget Survey.

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1.4 Data

Definition of ICT expenditure

Households' expenditure survey generally use classifications related to consumption functions. For instance, European countries use the United Nation Classification of Individual Consumption According to Purpose (COICOP) classification.

For comparison purpose, ICT goods and services expenditures have been defined using the United Nation Classification of Individual Consumption According to Purpose (COICOP).

ICT components

ICT expenditures have been split according to information technology and communication on the one hand, and goods and services on the other, forming four groups: IT goods, IT services, communication goods and communication services. The detailed selected items are provided in the Annex.

In four countries (Austria, Greece, Hungary and Norway), the variable expenditure has been mis-coded: both zero values (i.e. no expenditures) and missing values have been coded as "missing". In order to keep these countries in the analysis, we have decided to treat all missing codes as zero values (i.e. no expenditures). As a consequence of this choice, the effect of all independent variables (i.e. their coefficients) are likely to be underestimated. Therefore, we will report the regression coefficients for these four countries but we will not compare them with those of other countries.

Definition of the independent variables

A first round of preliminary tests for the European countries with the four categories adopted by Yin *et al.* (2005) to define the life cycle stage of the household — married with children, married without children, single persons, and others (single parents and other types of households) — did not lead to significant results, due to strong interactions between the age of the household's reference person and the household life cycle. It was not possible to isolate the respective effects of age and different types of households. It can be also considered that married households without children include two different types of households: young households as yet without children, and more senior households whose children have already left. Similarly, a negative quadratic relationship between age and ICT expenditure could not be clearly established.

It was therefore decided to select as independent variables related to life cycle of the household the presence of children, and if the household's reference person was living in a couple or not.

For the same reason, we specified a linear relationship between ICT expenditure and age. Based on previous research (e.g. ARCEP, 2008) we expect both the probability to spend on ICT and the level of expenditure to decrease with age.

Therefore, the hypotheses regarding life cycle stage and age have been revised as follows:

Life cycle stage — Children

Households with children are more likely to spend on ICT than households without.

Of households that spend on ICT, households with children are likely to spend more on ICT than households without children.

Life cycle stage — Couples

Couples are more likely to spend on ICT than other households.

Of households that spend on ICT, couples are likely to spend more on ICT than other households.

Age

There will be a negative relationship between the household reference person's age and the likelihood of spending on.

Of households that spend on ICT, the effect of age on amount spent will be negative. The independent (or explanatory) variables are therefore the following:

- *Income of the household*: the logarithm of the income will be selected. For European countries, the equivalent income has been selected (see the methodology).
- *Level of education of the household's reference person*: medium and high level will be compared to low level. This variable is not available for the United Kingdom.
- *Population density of the area where the household is living*: medium and highly densely populated area will be compared to lowly densely populated area. This variable is not available for Ireland and the Netherlands. For Canada, urban will be compared to rural areas.
- *Children*: presence of children (coded 1) will be compared with absence (coded 0). This variable is not available for the Netherlands. For Sweden and the United Kingdom, data could not be exploited properly.
- *Age*: age of the household's reference person. For Canada, age was provided using 5 year bracket intervals. A proxy for age value has been calculated, using the middle of the age interval (i.e. if the age was between 25 and 29, the age value has been put to 27 — see the methodology).
- *Couples*: households living in a couple (coded 1) will be compared with other households.
- *Gender*: households whose reference person is man (coded 1) will be compared with households whose reference person is a woman (coded 0).

Definition of the dependent variables

Preliminary tests, when using total ICT expenditure as a whole as dependent variable, could not lead to any coherent conclusion with respect to the independent variables. It was decided to focus specifically on each of the components of the ICT expenditure: information technology goods, information technology services, communication goods and communication services. The independent variables have specific effects on each of those ICT components which are not observable at a more aggregated level.

The dependent variables are therefore the following:

- Whether the household spends on information technology goods (coded 1) or not (coded 0) for the selection, and the logarithm of the amount of information goods expenditures, for the regression.
- Whether the household spends on information technology services (coded 1) or not (coded 0) for the selection, and the logarithm of the amount of information services expenditures, for the regression.
- Whether the household spends on communication goods (coded 1) or not (coded 0) for the selection, and the logarithm of the amount of communication goods expenditures, for the regression.
- Whether the household spends on communication services (coded 1) or not (coded 0) for the selection, and the logarithm of the amount of communication services expenditures, for the regression.

Descriptive statistics of the dependent and independent variables by country are provided in the Table A2 (see the Annex).

The effects of the independent variables on each of the dependent variable, mirrored by the coefficients in the tables, are analysed and discussed in the next section. An empty cell indicates that the cor-

responding variable could not be included in the regression, either because of strong collinearity with other variables or due to a low quality of the data.

Differences observed between communication goods and communication services should also be interpreted bearing in mind that the supply of communication services, in many countries, may incorporate the supply of communication goods (provided as package), reflecting a blurring of the frontier between goods and services.

2. RESULTS AND DISCUSSION

2.1 IT goods and services

IT goods — selection

The probability of spending on IT goods increases with the income in all the countries. The effect of income on the probability is particularly strong in Spain and Slovak Republic, and weak in the Netherlands, and seems to be relatively similar in countries such as Canada, Finland, France.

The probability of spending on IT goods also increases — generally monotonically — with the level of education of the household's reference person: the higher the level of education of the household's reference person, the higher the probability of spending on IT goods. In Finland however, a household whose reference person has a medium level of education has the highest probability of spending on IT goods, followed by households whose reference person has a high level of education.

Living in a densely populated area generally increases the probability that the household will spend on IT goods, except in France and Belgium. The effect of the population density is generally monotonic.

Households with children have a higher probability of spending on IT goods compared with households without children. This is in line with what has been generally observed concerning the adoption of ICT within households.

In all the countries, the probability of spending on IT goods decreases with the age of the household's reference person.

The effect of living in a couple is somewhat different among countries: households living in couple have a higher probability of spending on IT goods in five countries, but a lower probability in six others.

If the household's reference person is a man, it generally increases the probability of spending on IT goods, except in the Slovak Republic.

IT goods — regression

The income elasticity varies from 0.187 in Sweden to 0.83 in Switzerland. In most of the countries, the higher the level of education of the household's reference person, the more the household spends on IT goods. In Denmark, by contrast, households whose reference person has a high level of education spend less on IT goods compared to households whose reference person has a lower level of education.

Overall, the more densely the area is populated, the more the household spends on IT goods. By contrast, this relation is the reverse in France. And in Denmark and Finland, the households living in medium densely populated area spend more than those living in highly densely populated area.

Households with children spend more on IT goods, compared with households without children, in all the countries but France.

IT goods expenditures decrease with the age of the household's reference person.

As for the probability of spending on IT goods, the impact of living in a couple on the level of IT goods expenditure is somewhat different between countries: households living in a couple spend more on IT goods in Canada, Czech Republic and Sweden, but less in five other countries. When the household's reference person is a man, it increases the expenditure on IT goods.

Table 1 IT goods selection¹

		intercept	In income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	-0.814	0.017	0.570	0.312	0.146	0.067	0.484			
	SE	0.0028	0.0002	0.0025	0.0018	0.0017	0.0019	0.0016			
Belgium	Coef.	-2.734	0.288	0.149	0.040	0.017	-0.101	0.088	-0.012	-0.051	0.168
	SE	0.0176	0.0017	0.0026	0.0027	0.0048	0.0049	0.0026	0.0001	0.0022	0.0022
Canada ²	Coef.	-2.583	0.455	0.620	0.276	0.017		0.266	-0.030	0.165	0.046
	SE	0.0076	0.0007	0.0015	0.0013	0.0015		0.0017	0.00003	0.0012	0.0011
Czech Rep.	Coef.	-3.946	0.327	0.2853*	0.1669*	0.261	0.1685*	0.378	-0.021	0.733	0.1730**
	SE	0.8722	0.0580	0.0953*	0.0579*	0.0626	0.0685*	0.0586	0.00202	0.1023	0.1006**
Denmark	Coef.	-2.842	0.278	0.388	0.303	0.248	0.132	0.294			
	SE	0.01092	0.00105	0.00260	0.00200	0.00217	0.00224	0.00230			
Finland	Coef.	-4.636	0.436	0.407	0.427	0.142	0.194	0.465			
	SE	0.01428	0.00142	0.00239	0.00207	0.00201	0.00247	0.00245			
France	Coef.	-3.625	0.427	0.221	0.174	-0.099	0.007	0.112	-0.020	-0.087	0.079
	SE	0.0046	0.0005	0.0008	0.0006	0.0006	0.0008	0.0007	0.0000	0.0006	0.0006
Greece	Coef.	-4.582	0.454	0.180	0.089	0.258	0.146	0.503	-0.017	-0.149	
	SE	0.0121	0.0012	0.0021	0.0017	0.0015	0.0039	0.0018	0.0001	0.0016	
Hungary	Coef.	-4.965	0.462	0.402	0.235	0.078	0.075	0.328			
	SE	0.0107	0.0012	0.0020	0.0017	0.0018	0.0018	0.0016			
Ireland	Coef.	-2.847	0.349	0.199	0.113	n.a.	n.a.	0.119	-0.015	-0.011	0.151
	SE	0.0179	0.0016	0.0030	0.0029	n.a.	n.a.	0.0027	0.0001	0.0025	0.0024
Netherlands	Coef.	-0.6336 [†]	0.179	0.535	0.3267*	n.a.	n.a.	n.a.	-0.018	0.2565*	0.367
	SE	0.4406 [†]	0.0416	0.1306	0.1134*	n.a.	n.a.	n.a.	0.00264	0.0930*	0.0923
Norway	Coef.	-0.4225*	0.1144	0.303	0.1607*	0.0829*	0.0859**	0.368	-0.0194		
	SE	0.1419*	0.0124	0.0536	0.0491*	0.0387*	0.0503**	0.0432	0.0013		
Slovak Rep.	Coef.	-6.838	0.570	0.564	0.468	0.205	0.090	0.176	-0.003	0.083	-0.052
	SE	0.0259	0.0026	0.0067	0.0061	0.0033	0.0030	0.0029	0.0001	0.0026	0.0028
Spain	Coef.	-5.476	0.632	0.167	0.146	0.281	0.052	0.166	-0.017	-0.218	0.137
	SE	0.0079	0.0008	0.0011	0.0011	0.0009	0.0010	0.0010	0.00003	0.0008	0.0010
Sweden	Coef.	-2.179	0.292	0.324	0.024	0.024	0.015	n.a.	-0.019	0.235	0.126
	SE	0.0098	0.0010	0.0020	0.0019	0.0016	0.0020	n.a.	0.0000	0.0016	0.0014
Switzerland	Coef.	-3.612	0.389	0.530	0.454	n.a.	n.a.	0.292	-0.012	-0.069	0.074
	SE	0.0134	0.0015	0.0029	0.0027	n.a.	n.a.	0.0017	0.0000	0.0019	0.0019
United Kingdom	Coef.	-3.607	0.373	n.a.	n.a.	-0.0360 [†]	-0.0311 [†]	n.a.	-0.014		
	SE	0.1356	0.0118	n.a.	n.a.	0.0328 [†]	0.0383 [†]	n.a.	0.000547		

¹ The coefficients have all a p value < .001, except: * p < .05; **p < 0.1; [†] p > =0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: OECD, based on data from the Czech Statistical Office, Eurostat, Statistics Canada and the Swiss Federal Statistical Office

Table 2 IT goods regression¹

		intercept	ln income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	6.231	0.015	0.254	0.129	0.073	-0.0029 [†]	0.048			
	SE	0.0152	0.0003	0.0052	0.0035	0.0024	0.0025 [†]	0.0039			
Belgium	Coef.	3.240	0.222	0.275	0.039	0.117	-0.157	0.152	-0.009	-0.065	0.304
	SE	0.0552	0.0043	0.0046	0.0046	0.0077	0.0080	0.0040	0.0002	0.0035	0.0041
Canada ²	Coef.	0.053	0.614	0.271	0.089	0.151		0.178	-0.017	0.025	0.177
	SE	0.0065	0.0006	0.0013	0.0013	0.0012		0.0009	0.00003	0.0009	0.0008
Czech rep. (ols)	Coef.	6.374	0.290	0.524	0.2473*	0.2133*	0.1187 [†]	0.279	-0.023	0.617	0.4253*
	SE	1.1707	0.0775	0.1115	0.0771*	0.0827*	0.0911 [†]	0.0628	0.0029	0.1569	0.1621*
Denmark	Coef.	0.682	0.455	-0.449	0.069	0.110	0.190	0.224			
	SE	0.0333	0.0027	0.0053	0.0045	0.0045	0.0046	0.0041			
Finland	Coef.	2.210	0.345	0.289	0.313	0.124	0.170	0.145			
	SE	0.0265	0.0021	0.0030	0.0029	0.0022	0.0026	0.0026			
France	Coef.	1.569	0.433	0.268	0.159	-0.138	-0.137	-0.250	-0.006	-0.092	0.045
	SE	0.0138	0.0013	0.0012	0.0011	0.0009	0.0012	0.0010	0.0001	0.0009	0.0009
Greece	Coef.	-0.406	0.550	0.208	0.161	0.025	-0.124	0.344	-0.017	-0.208	
	SE	0.0248	0.0022	0.0029	0.0025	0.0022	0.0056	0.0031	0.0001	0.0024	
Hungary	Coef.	1.165	0.365	0.224	0.100	0.022	-0.038	0.018			
	SE	0.0296	0.0025	0.0030	0.0025	0.0025	0.0025	0.0024			
Ireland (ols)	Coef.	3.320	0.278								
	SE	0.2909	0.02577								
Netherlands (ols)	Coef.	3.918	0.238	0.1916 [†]	-0.0009 [†]	n.a.	n.a.	n.a.	-0.011		
	SE	0.3946	0.0358	0.1250 [†]	0.1183 [†]	n.a.	n.a.	n.a.	0.0024		
Norway (ols)	Coef.	5.189	0.092	0.297	0.1344**						
	SE	0.2207	0.0163	0.0820	0.0797**						
Slovak Rep. (ols)	Coef.	-0.7335 [†]	0.560								
	SE	1.2264 [†]	0.1305								
Spain	Coef.	-0.345	0.576	0.484	0.365	0.151	0.054	0.072	-0.026	-0.105	0.133
	SE	0.0190	0.0018	0.0017	0.0017	0.0016	0.0018	0.0015	0.0001	0.0015	0.0017
Sweden	Coef.	4.492	0.187	0.087	0.052	0.244	0.023	n.a.	-0.008	0.043	0.112
	SE	0.0176	0.0016	0.0025	0.0022	0.0017	0.0021	n.a.	0.0001	0.0018	0.0016
Switzerland	Coef.	-4.398	0.835	0.669	0.654	n.a.	n.a.	0.200	-0.021	-0.180	0.268
	SE	0.0280	0.0030	0.0062	0.0059	n.a.	n.a.	0.0032	0.0001	0.0036	0.0034
United Kingdom (ols)	Coef.	3.523	0.317	n.a.	n.a.	-0.1484 [†]	-0.0261 [†]	n.a.	-0.0052*		
	SE	0.4356	0.0382	n.a.	n.a.	0.1068 [†]	0.1247 [†]	n.a.	0.0020*		

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p > =0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

IT services — selection

The probability to spend on IT services increases with the income in all the countries, and the effect of income on the probability is particularly strong in France, Ireland and Slovak Republic.

The education level of the household's reference person always has a positive, generally inverse u-shaped, effect on the probability that this household will spend on IT services. In a significant number of countries, the strongest effect is provided by the medium level of education, followed by the highest level of education.

The household probability of spending on IT services generally increases with the population density of the area where the household lives. However, the relation is inverted in Sweden. And in that country and in the Slovak Republic and the United Kingdom, households living in a highly densely populated area have the lowest probability of spending on IT services compared with households living in other areas.

Table 3 IT services — selection¹

		intercept	In income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	-1.349	0.010	0.179	0.159	0.197	0.091	0.069	0.003	0.022	0.089
	SE	0.0047	0.0003	0.0029	0.0021	0.0019	0.0022	0.0020	0.0001	0.0018	0.0018
Belgium	Coef.	-1.12434	0.208099								
	SE	0.0141	0.0014								
Canada ²	Coef.	-3.070	0.383	0.495	0.191	0.112		0.281	-0.0003	0.508	-0.191
	SE	0.0083	0.0008	0.0017	0.0015	0.0017		0.0019	0.00004	0.0014	0.0012
Czech Rep.	Coef.	-2.7465*	0.1763*	-0.0924 [†]	0.339	-0.1146 [†]	0.0148 [†]	0.0755 [†]	0.027	0.0736	
	SE	1.1917*	0.0798*	0.1305 [†]	0.0940	0.0956 [†]	0.1099 [†]	0.0719 [†]	0.00307	0.0927	
Denmark	Coef.	-1.771	0.340								
	SE	0.0125	0.0012								
Finland	Coef.	-1.010	0.226								
	SE	0.0179	0.0017								
France	Coef.	-7.076	0.734								
	SE	0.0039	0.0004								
Greece	Coef.	0.588	0.192	0.161	0.284	0.749	3.3740 [†]	0.040	-0.001		
	SE	0.0582	0.0054	0.0128	0.0104	0.0113	9.4331 [†]	0.0093	0.0002		
Hungary	Coef.	-3.689	0.347	0.323	0.310	1.009	0.600	-0.090			
	SE	0.0100	0.0011	0.0020	0.0017	0.0018	0.0017	0.0017			
Ireland	Coef.	-5.411	0.580	0.320	0.257	n.a.	n.a.	0.523			
	SE	0.0186	0.0018	0.0041	0.0037	n.a.	n.a.	0.0039			
Netherlands	Coef.	-1.811	0.0858**	0.1771*							
	SE	0.4824	0.0473**	0.0785*							
Norway	Coef.	-1.536	0.0274*	0.1531*	0.1732*	0.1179*	0.207				
	SE	0.1633	0.0122*	0.0606*	0.0573*	0.0436*	0.0552				
Slovak Rep.	Coef.	-4.366	0.527	0.428	0.464	-0.239	0.172	0.226	0.008	-0.112	-0.074
	SE	0.0228	0.0025	0.0048	0.0035	0.0032	0.0029	0.0032	0.0001	0.0028	0.0028
Spain	Coef.	-4.742	0.445	0.036	0.075	0.245	0.204	0.061	-0.008	-0.190	0.198
	SE	0.0077	0.0007	0.0010	0.0010	0.0008	0.0010	0.0009	0.00003	0.0008	0.0010
Sweden	Coef.	-1.685	0.151	0.031	0.314	-0.214	-0.081	n.a.	0.028	0.412	0.056
	SE	0.0102	0.0010	0.0031	0.0031	0.0022	0.0029	n.a.	0.0001	0.0023	0.0020
Switzerland	Coef.	-3.756	0.531	0.202	0.174	n.a.	n.a.	-0.028	0.011	0.375	-0.126
	SE	0.0214	0.0025	0.0043	0.0037	n.a.	n.a.	0.0034	0.00008	0.0034	0.0031
United Kingdom	Coef.	0.764	0.314	n.a.	n.a.	-0.1297*	0.0216 [†]	n.a.	-0.046	0.132	
	SE	0.1698	0.0148	n.a.	n.a.	0.0452*	0.0533 [†]	n.a.	0.0009	0.0285	

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p > =0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

Households with children have a higher probability of spending on IT services, except in Hungary and Switzerland. The positive effect of a child's presence is the strongest in Ireland.

The effect of age on the probability of households spending on IT services varies according to the country, contrasting with its systematic negative orientation with respect to IT goods.

Households living in a couple have generally a higher probability of spending on IT services, except in Slovak Republic and Spain.

The gender of the household's reference person does not have a similar effect in all the countries on the probability of the household spending on IT services. This contrasts with the positive effect on the probability of spending on IT goods when the household's reference person is a man.

IT services — regression

The income elasticity is varies from 0.07 in Finland to 0.6 in France.

Table 4 IT services — regression¹

		intercept	ln income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	6.840	0.0096*								
	SE	0.0435	0.0044*								
Belgium	Coef.	4.123	0.090								
	SE	0.0073	0.0007								
Canada ²	Coef.	2.779	0.323	0.077	0.078	0.083		0.064	0.001	0.119	-0.024
	SE	0.0036	0.0003	0.0007	0.0007	0.0007		0.0005	0.00002	0.0005	0.0004
Czech Rep.	Coef.	8.071	0.179	0.0605 [†]	0.0289 [†]	0.106	0.0930*	0.097	0.0007 [†]	0.208	
	SE	0.3752	0.0248	0.0377 [†]	0.0242 [†]	0.0260	0.0285*	0.0212	0.0009 [†]	0.0264	
Denmark	Coef.	4.621	0.129								
	SE	0.0049	0.0005								
Finland	Coef.	4.664	0.070								
	SE	0.0027	0.0003								
France	Coef.	-1.356	0.603								
	SE	0.0033	0.0003								
Greece	Coef.	0.679	0.316	0.183	0.082	0.064	0.0148 [†]	0.121			
	SE	0.1475	0.0147	0.0275	0.0216	0.0188	0.0494 [†]	0.0206			
Hungary	Coef.	3.429	0.151	0.092	0.104	0.233	0.125	0.036			
	SE	0.0101	0.0008	0.0011	0.0010	0.0020	0.0016	0.0009			
Ireland	Coef.	3.353	0.228	-0.0038*	0.089	n.a.	n.a.	0.040			
	SE	0.0155	0.0013	0.0016*	0.0017	n.a.	n.a.	0.0015			
Norway	Coef.	5.726	0.166	-0.985	-0.739	-0.3228*					
	SE	0.3987	0.0306	0.1717	0.1621	0.1026*					
Slovak Rep.	Coef.	2.287	0.179	0.160	0.098	0.447	0.300	0.016	-0.007	0.0024*	-0.013
	SE	0.0110	0.0011	0.0021	0.0017	0.0013	0.0011	0.0012	0.0000	0.0010*	0.0011
Spain	Coef.	-0.8908 [†]	0.470								
	SE	0.7401 [†]	0.0713								
Sweden	Coef.	4.582	0.108	0.072	0.132	-0.042	-0.057	n.a.	-0.002	0.076	0.083
	SE	0.0043	0.0004	0.0009	0.0008	0.0007	0.0008	n.a.	0.0000	0.0007	0.0006
Switzerland	Coef.	2.511	0.125	-0.092	-0.053	n.a.	n.a.	0.022	0.003	0.045	0.034
	SE	0.0054	0.0006	0.0009	0.0008	n.a.	n.a.	0.0006	0.0000	0.0007	0.0006
United Kingdom	Coef.	3.563	0.227	n.a.	n.a.	0.0840*	0.0409 [†]	n.a.	-0.003	0.0248 [†]	
	SE	0.1462	0.0127	n.a.	n.a.	0.0393*	0.0459 [†]	n.a.	0.0007	0.0225 [†]	

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p > =0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

In most of countries, when the household's reference person has a high level of education, the household has a higher expenditure on IT services, compared to households whose reference person has a low level of education. By contrast, for households whose reference person has a high level of education, the level of expenditure is lower in Ireland and in Switzerland.

Households living in densely populated areas generally spend more on IT services, except in Norway and Sweden. Household expenditure on IT services decreases with age in three European countries, contrasting with Canada and Switzerland where they increase.

Households with children spend more on IT services compared with households without children. Similarly, households living in a couple also spend more on IT services.

The gender of the household's reference person does not have a homogenous effect on the level of IT services expenditure of that household.

IT goods and services

Overall, the effects of the various explanatory variables seem to be more homogeneous, as far as both selection and regression are concerned, for IT goods compared with IT services. In addition, the effects between selection and regression seem to be much more similar for IT goods as for IT services.

For IT goods, income, education, child, population density in the area where the household live and household's reference person being a man are all factors which generally increase both the probability of spending and the level of expenditure of the household. And both the probability and the level decrease with age. By contrast, the fact that the household lives in a couple does not lead to similar effects.

For IT services, income, child, and the fact that households live in a couple, are factors that have a positive effect on both probability and level of expenditures. Education generally has a positive effect on the probability of spending on IT services but the effect is less homogeneous as regards the level of expenditure. And age, population density in the area where the household live and household's reference person being a man are all factors which have a rather heterogeneous effect on both the probability of spending and on the level of expenditure.

2.2 Communication goods and services

Communication goods — selection

The probability of spending on communication goods increases with the income in all the countries. The positive effect of income on the probability is relatively strong in Belgium and Spain, weaker in France and Denmark, and seems to be relatively similar among countries such as Canada and Finland, or Czech Republic and Switzerland.

The probability of spending on communication goods also increases with the level of education of the household's reference person: the higher the level of education of the household's reference person, the higher generally is the probability of spending on communication goods. In Finland, Norway, and the Slovak Republic however, a household whose reference person has a medium level of education has the highest probability of spending on ICT, followed by households whose reference person has a high level of education. In Ireland, by contrast, for households whose reference person has a high level of education, the probability of spending in communication goods is the lowest.

Living in a densely populated area tends to have a more heterogeneous effect, depending on the country, on the probability that the household will spend on communication goods.

As observed for IT goods, households with children generally have a higher probability of spending on communication goods, compared with households without children. And in all the countries, the probability of spending on communication goods decreases with the age of the household's reference person.

The impact of living in a couple is generally positive, except in Ireland and Spain.

If the household's reference person is a man, the effect varies according to the country.

Table 5 Communication goods — selection¹

		intercept	ln income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	-2.236	0.008	0.182	0.125	-0.059	0.0013 [†]	0.289			
	SE	0.0061	0.0005	0.0055	0.0041	0.0036	0.0040 [†]	0.0032			
Belgium	Coef.	-5.521	0.408								
	SE	0.0208	0.0019								
Canada ²	Coef.	-2.000	0.174	0.130	0.116	-0.007		0.079	-0.011	0.061	-0.046
	SE	0.0059	0.0006	0.0012	0.0012	0.0012		0.0009	0.00003	0.0009	0.0008
Czech rep.	Coef.	-4.090	0.227	-0.0130 [†]	0.0504 [†]	0.1917*	0.0359 [†]	0.274	-0.007	0.514	
	SE	0.8605	0.0567	0.0836 [†]	0.0550 [†]	0.0589*	0.0657 [†]	0.0470	0.0019	0.0613	
Denmark	Coef.	-2.482	0.118	0.103	0.095	0.053	0.043	0.298			
	SE	0.0165	0.0016	0.0030	0.0024	0.0025	0.0026	0.0025			
Finland	Coef.	-2.376	0.163	0.077	0.211	0.051	0.032	0.590			
	SE	0.0141	0.0014	0.0024	0.0021	0.0020	0.0024	0.0022			
France	Coef.	-2.200	0.101	0.360	0.301	-0.094	0.052	0.280			
	SE	0.0048	0.0005	0.0008	0.0007	0.0006	0.0009	0.0007			
Greece	Coef.	-3.429	0.178	0.214	0.031	0.068	0.187	0.073	-0.007	0.040	-0.068
	SE	0.0219	0.0022	0.0036	0.0032	0.0026	0.0063	0.0032	0.0001	0.0029	0.0033
Hungary	Coef.	-3.202	0.282	0.093	0.049	-0.071	0.089	0.191	-0.013		
	SE	0.0146	0.0015	0.0024	0.0021	0.0023	0.0022	0.0020	0.0001		
Ireland	Coef.	-2.998	0.291	-0.088	0.045	n.a.	n.a.	0.421	-0.018	-0.243	0.177
	SE	0.0185	0.0017	0.0031	0.0030	n.a.	n.a.	0.0027	0.0001	0.0026	0.0026
Netherlands	Coef.	-2.150	0.163								
	SE	0.4240	0.0412								
Norway	Coef.	-0.766	0.0218*								
	SE	0.1297	0.0101*								
Slovak Rep.	Coef.	-5.202	0.307	0.0258*	0.050	0.093	-0.061	-0.074	-0.0004**	0.103	0.108
	SE	0.0551	0.0057	0.0124*	0.0106	0.0068	0.0065	0.0065	0.0002**	0.0057	0.0064
Spain	Coef.	-4.921	0.429	0.173	0.068	0.070	-0.053	0.079	-0.011	-0.098	0.073
	SE	0.0092	0.0009	0.0011	0.0012	0.0010	0.0012	0.0010	0.0000	0.0009	0.0011
Sweden	Coef.	-1.290	0.138	0.087	0.047	-0.063	0.014	n.a.	-0.017	0.093	-0.026
	SE	0.0109	0.0011	0.0022	0.0021	0.0017	0.0020	n.a.	0.0001	0.0017	0.0015
Switzerland	Coef.	-3.473	0.229	0.182	0.174	n.a.	n.a.	0.028	-0.010	0.110	-0.037
	SE	0.0237	0.0027	0.0052	0.0049	n.a.	n.a.	0.0028	0.0001	0.0033	0.0031
United Kingdom	Coef.	-3.635	0.207	n.a.	n.a.	-0.0346 [†]	0.0615 [†]	n.a.	-0.007		
	SE	0.2593	0.0223	n.a.	n.a.	0.0617 [†]	0.0706 [†]	n.a.	0.0011		

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p >= 0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

Communication goods — regression

The income elasticity varies from 0.13 in Ireland to 0.52 in Denmark.

The level of education of the household's reference person has a very heterogeneous effect on the level of expenditure that a household devotes to communication goods.

Households living in a high densely populated area spend less on communication goods in European countries but more in Canada.

Households with children spend more on communication goods, compared with households without children, in all the countries except Hungary.

As with IT goods expenditure, communication goods expenditure decreases with the age of the household's reference person.

Table 6 Communication goods — regression¹

		intercept	In income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Belgium	Coef.	2.749	0.256								
	SE	0.1078	0.0071								
Canada ²	Coef.	1.634	0.295	-0.030	0.035	0.133		0.089	-0.005	-0.101	0.016
	SE	0.0312	0.0018	0.0020	0.0020	0.0014		0.0013	0.0001	0.0012	0.0010
Denmark (ols)	Coef.	-1.6075 [†]	0.518								
	SE	1.5393 [†]	0.1418								
Finland	Coef.	2.325	0.239	-0.046	0.097	-0.021	0.075	0.160			
	SE	0.0351	0.0022	0.0030	0.0032	0.0024	0.0028	0.0054			
France	Coef.	2.199	0.210	0.085	-0.0235*	-0.126	-0.021	0.0266*			
	SE	0.1137	0.0037	0.0131	0.0111*	0.0037	0.0027	0.0101*			
Greece (ols)	Coef.	1.4471**	0.315								
	SE	0.8526**	0.0808								
Hungary	Coef.	2.350	0.209	0.104	0.069	-0.0066*	0.037	-0.097	-0.004		
	SE	0.0334	0.0027	0.0032	0.0028	0.0031*	0.0029	0.0029	0.0001		
Ireland (ols)	Coef.	3.510	0.136	-0.159	-0.139	n.a.	n.a.	0.133			
	SE	0.2259	0.0206	0.0397	0.0400	n.a.	n.a.	0.0330			
Netherlands	Coef.	0.9976*	0.236								
	SE	0.4997*	0.0460								
Spain (ols)	Coef.	1.2264 [†]	0.2635*								
	SE	0.8771 [†]	0.0839*								
Sweden (ols)	Coef.	4.269	0.147	-0.0973 [†]	0.0390 [†]	-0.0318 [†]	-0.1959*	n.a.	-0.013		
	SE	0.3618	0.0349	0.0975 [†]	0.0954 [†]	0.0750 [†]	0.0890*	n.a.	0.0024		
Switzerland (ols)	Coef.	-0.5026 [†]	0.513								
	SE	1.3844 [†]	0.1506								

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p > =0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

Communication services — selection

The probability of spending on communication services increases with the income in all the countries. The positive effect of income on the probability is particularly strong in Spain, contrasting with its weakness in Denmark.

The education level of the household's reference person always has a positive effect on the probability that this household will spend on communication services. In a significant number of countries though, the strongest effect is provided by the medium level of education, followed by the highest level of education.

The household probability of spending on communication services generally increases with the population density in the area where the household lives. In Denmark and Canada, households living in a highly densely populated area have the lowest probability of spending on IT services compared with households living in other areas.

Households with children have a higher probability of spending on communication services, except in Denmark, the Slovak Republic and Switzerland. The positive effect of a child's presence is the strongest in Canada.

The effect of age on the probability of households spending on communication services is generally positive, except in Austria and Ireland. This overall positive effect contrasts with the generally negative effect observed as far as IT goods and communication goods are concerned.

The impact of living in a couple is positive on the probability of spending on communication services, except in Finland. The impact is the strongest in Ireland.

If the household's reference person is a man, it decreases the probability of spending on communication services in all the countries.

Communication services — regression

The income elasticity varies from 0.09 in Denmark to 0.7 in the Slovak Republic.

In most of countries, when the household's reference person has a high level of education, the household has a higher expenditure on communication services, compared with households whose reference person has a low level of education. In more than half the countries, the higher the level of education of the household's reference person, the more the household spends on communication services. By contrast, in Finland and Ireland, for households whose reference person has a high level of education, the level of expenditures is the lowest.

Households living in a densely populated area generally spend more on communication services, except in Canada and France.

Households with children spend more on communication services, compared with households without children.

Table 7 Communication services — selection¹

		intercept	ln income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	-0.316	0.015	0.047	0.144	0.153	0.042	0.113	-0.004	0.057	
	SE	0.0040	0.0002	0.0026	0.0018	0.0017	0.0019	0.0018	0.0000	0.0015	
Belgium	Coef.	-1.124	0.153	0.375	0.278	0.215	0.114	0.137			
	SE	0.0169	0.0016	0.0028	0.0029	0.0053	0.0054	0.0028			
Canada ²	Coef.	-2.356	0.374	0.540	0.265	-0.032		0.793	0.008	0.138	-0.238
	SE	0.0136	0.0013	0.0032	0.0026	0.0032		0.0053	0.0001	0.0026	0.0022
Czech Rep.	Coef.	-2.8671 [†]	0.3896*	0.1494 [†]	0.646	0.1138 [†]	0.0585 [†]	0.2436 [†]	-0.025	0.818	
	SE	1.9711 [†]	0.1343*	0.2150 [†]	0.1584	0.1380 [†]	0.1494 [†]	0.1712 [†]	0.0048	0.1371	
Denmark	Coef.	1.731	0.010	0.348	0.182	-0.048	0.293	-0.032			
	SE	0.0245	0.0024	0.0059	0.0042	0.0043	0.0052	0.0047			
Finland	Coef.	-2.012	0.396	0.183	0.312	0.361	0.120	0.319	0.003	-0.029	-0.398
	SE	0.0409	0.0043	0.0066	0.0057	0.0062	0.0064	0.0087	0.0001	0.0061	0.0051
France	Coef.	-4.161	0.565	0.177	0.0024*	0.173	0.043				
	SE	0.0068	0.0007	0.0015	0.0010*	0.0010	0.0014				
Greece	Coef.	-8.141	1.054	5.3070 [†]	0.772	0.390	-0.195	0.677			
	SE	0.0484	0.0052	0.0000 [†]	0.0082	0.0065	0.0090	0.0086			
Hungary	Coef.	-5.537	0.790	0.555	0.650	0.158	0.031	0.055			
	SE	0.0157	0.0019	0.0052	0.0039	0.0031	0.0028	0.0034			
Ireland	Coef.	-0.117	0.252	0.292	0.207	n.a.	n.a.	0.285	-0.008	0.856	-0.356
	SE	0.0332	0.0030	0.0103	0.0086	n.a.	n.a.	0.0114	0.0002	0.0109	0.0063
Slovak Rep.	Coef.	-3.554	0.470	0.299	0.379	0.029	0.157	-0.187			
	SE	0.0181	0.0021	0.0045	0.0032	0.0030	0.0026	0.0027			
Spain	Coef.	-6.956	0.901	0.072	-0.082	0.321	0.043	0.132			
	SE	0.0152	0.0016	0.0038	0.0030	0.0020	0.0023	0.0025			
Sweden	Coef.	0.106	0.123	0.102	0.075	0.331	0.0061 [†]	n.a.	0.011	0.521	-0.292
	SE	0.0148	0.0014	0.0046	0.0042	0.0040	0.0041 [†]	n.a.	0.0001	0.0037	0.0032
Switzerland	Coef.	1.651	0.033	0.203	0.309	n.a.	n.a.	-0.120	0.012	0.660	-0.417
	SE	0.0557	0.0066	0.0112	0.0102	n.a.	n.a.	0.0088	0.0002	0.0091	0.0084
United Kingdom	Coef.	-2.7957	0.4065	n.a.	n.a.	-0.0543 [†]	-0.0479 [†]	n.a.	0.0110	0.2949	-0.1993
	SE	0.1674	0.0149	n.a.	n.a.	0.0631 [†]	0.0735 [†]	n.a.	0.0009	0.0399	0.0327

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p >= 0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

Table 8 Communication services — regression¹

		intercept	ln income	d_edu_high	d_edu_med	d_geo_high	d_geo_med	d_child	age	d_cple	d_male
Austria	Coef.	6.837	0.0114*	0.223	0.178	0.099					
	(ols) SE	0.0550	0.0047*	0.0502	0.0357	0.0285					
Belgium	Coef.	3.558	0.265	0.237	0.142	0.107	0.046	0.061			
	SE	0.0127	0.0011	0.0020	0.0020	0.0035	0.0036	0.0016			
Canada ²	Coef.	3.469	0.317	0.040	0.069	-0.034		0.087	-0.004	0.055	-0.092
	SE	0.0030	0.0003	0.0006	0.0006	0.0006		0.0005	0.00001	0.0004	0.0004
Czech Rep.	Coef.	8.894	0.222	0.1318*	0.110	0.122	0.0086 [†]	0.183	-0.008	0.598	
	SE	0.4593	0.0304	0.0465*	0.0302	0.0325	0.0358 [†]	0.0261	0.0011	0.0325	
Denmark	Coef.	5.199	0.089	0.033	0.134	0.135	0.071	0.313			
	SE	0.0076	0.0007	0.0017	0.0013	0.0014	0.0015	0.0014			
Finland	Coef.	1.542	0.504	-0.119	-0.0363 [†]	0.0140 [†]	0.0374 [†]	0.268	-0.009	-0.0728*	
	(ols) SE	0.1922	0.0195	0.0299	0.0275 [†]	0.0238 [†]	0.0289 [†]	0.0282	0.0007	0.0252*	
France	Coef.	3.163	0.397	0.096	0.058	-0.117	-0.0485*	0.071	-0.014	-0.169	
	(ols) SE	0.1240	0.0125	0.0221	0.0174	0.0157	0.0223*	0.0190	0.0005	0.0158	
Greece	Coef.	0.217	0.600	0.340	0.300	0.069	-0.030	0.176			
	SE	0.0050	0.0005	0.0009	0.0007	0.0006	0.0017	0.0007			
Hungary	Coef.	0.490	0.560	0.393	0.264	0.155	0.029	0.020			
	SE	0.0054	0.0006	0.0010	0.0009	0.0009	0.0009	0.0008			
Ireland	Coef.	2.156	0.541	-0.143	-0.0010 [†]	n.a.	n.a.	0.152	-0.022	-0.178	-0.008
	SE	0.0106	0.0009	0.0019	0.0018 [†]	n.a.	n.a.	0.0017	0.0001	0.0016	0.0015
Netherlands	Coef.	5.221	0.178	0.1197*	0.1040*	n.a.	n.a.	n.a.	-0.012		
	(ols) SE	0.1884	0.0175	0.0546*	0.0502*	n.a.	n.a.	n.a.	0.0010		
Norway	Coef.	6.239	0.095								
	SE	0.2092	0.0164								
Slovak Rep.	Coef.	-1.181	0.693	0.305	0.251	0.184	0.145	0.020			
	SE	0.0144	0.0014	0.0024	0.0021	0.0014	0.0013	0.0012			
Spain	Coef.	-0.729	0.665	0.148	0.176	0.102	0.082	0.019			
	SE	0.0036	0.0004	0.0005	0.0005	0.0004	0.0005	0.0004			
Sweden	Coef.	5.313	0.165	0.106	0.119	0.109	0.061	n.a.	-0.014	0.059	0.040
	SE	0.0043	0.0004	0.0010	0.0009	0.0008	0.0009	n.a.	0.0000	0.0008	0.0007
Switzerland	Coef.	2.577	0.312	0.026	0.037	n.a.	n.a.	0.226	-0.015	0.068	0.012
	SE	0.0064	0.0007	0.0013	0.0011	n.a.	n.a.	0.0008	0.0000	0.0009	0.0009
United Kingdom	Coef.	4.127	0.308	n.a.	n.a.	0.0085 [†]	-0.0165 [†]	n.a.	-0.016	-0.068	-0.0184**
	SE	0.0738	0.0064	n.a.	n.a.	0.0179 [†]	0.0209 [†]	n.a.	0.0003	0.0112	0.0109**

¹ The coefficients have all a p value < .001, except: * p < .05; ** p < 0.1; [†] p >= 0.1.

² Income instead of equivalent income. Urban instead of d_geo_high and d_geo_med. See methodology.

Source: see Table 1

Households' expenditure on communication services decrease with age.

The effect of living in a couple differs among countries: a household living in a couple have a higher probability of spending on IT services in four countries, but a lower one in four others.

Similarly, if the household's reference person is a man, the effect varies according to the country.

Communication goods and services

Overall, the various explanatory variables have diverging effects according to whether we are referring to communication goods or communication services:

- Concerning the probability of spending, the population density in the area where the household is living generally has a positive effect where services are concerned, whereas the effect is much more variable across countries where goods are concerned. Similarly, if the household's reference

person is a man, this has a negative effect on services, whereas the effect is much more variable across countries where goods are concerned.

- Concerning the level of expenditure, it is generally higher for households whose reference person has a high level of education, where services are concerned, whereas this is not so frequently the case where goods are concerned.
- Age has opposite effects on goods and services in the selection (negative for goods, more positive for services). Geographical densely populated area also has opposite effects in the regression (more positive for services, more negative for goods).

In addition, where both communication goods and communication services are concerned, the effects of variables are not always the same on the probability of spending and the amount spent.

- *For communication goods*, the education level of the household's reference person generally has a positive effect on the probability of spending. But this effect on the amount spent is much more heterogeneous, depending on the country.
- *For communication services*, the probability of spending increases with age, but the amount spent decreases with age.

2.3 Main pattern of determinants

Determinants could be classified according to the homogeneity of their effect on ICT expenditures.

- First, income and child have positive effect on the probability to spend and on the level of expenditures in all types of ICT expenditures.
- Second, education level has generally positive and monotonic effect for IT goods and services and communication services. But the effect is more variable across countries for communication goods.
- Third, geographical area has positive effect — monotonic for the probability, but not for the amount spent — on IT goods and communication services. But the effect is more variable across countries for communication goods and IT services.
- Fourth, age decreases both the probability to spend and the amount spent on goods. The effect is more variable for services.
- Fifth, if the household's reference person is a man, it has an increasing effect for both the probability to spend and on the level of expenditures on IT goods. For IT services and communication goods and services, the effect is more variable.
- Sixth, to live in a couple has an increasing effect for the probability to spend and a decreasing effect on the amount spent for communication goods and services. The effect is positive for IT services but more variable for IT goods.

Two main patterns of determinants of Household's expenditures on ICT seem to emerge, both relatively similar across countries (Figure 1): one for IT goods, one for communication services. They distinguish from each other for age and gender effects. Age decreases the probability to spend on IT goods but increases the probability to spend on Communication services. And if the household's reference person is a man, it has an increasing effect for both the probability to spend and on the level of expenditures on IT goods, but a more variable effect for communication services.

Otherwise, both for IT goods and communication services, income, education level, geographical area and child have positive effects on the probability to spend and on the level of expenditures.

Communication goods could fall under the "communication" umbrella for couple effect and under the "goods" umbrella for age and gender effect. IT services is compatible both with IT goods and communication services features.

Figure 1 The effects¹ of selected determinants on households ICT expenditure

n = number of countries where results are available

	Information Technology					Communication				
		probability	n	level	n		probability	n	level	n
Goods	income	+	17	+	17	income	+	17	+	12
	education level	+	16	+	14	education level	+	14	+/-	6
	geographical area	+	14	+	12	geographical area	+/-	12	-	5
	child	+	14	+	11	child	+	12	+	5
	age	-	13	-	10	age	-	10	-	3
	couple	+/-	11	+/-	8	couple	+	8	-	1
	gender (male)	+	10	+	7	gender (male)	+/-	7	+	1
Services	income	+	17	+	16	income	+	17	+	17
	education level	+	12	+	9	education level	+	14	+	15
	geographical area	+/-	10	+/-	8	geographical area	+	13	+	13
	child	+	9	+	7	child	+	12	+	12
	age	+/-	9	+/-	6	age	+	8	-	8
	couple	+	8	+	5	couple	+	8	+/-	8
	gender (male)	+/-	6	+/-	4	gender (male)	-	6	+/-	5

¹ Main effect observed across countries. The sign "+ / -" mirrors no dominant trend across countries.

Source: see Table 1

CONCLUSION AND NEXT STEPS

A first step into the analysis of determinants of household's ICT expenditures has shown that some determinants, at the level of more elementary expenditures components (IT goods, IT services, Communication goods and communication services) have significant and relatively similar effects, as expected in the research questions. This is the case of income and presence of children, which have generally a positive impact on both the probability to spend and the level of expenditures.

The effects of other determinants are less similar across countries or between goods and services, but do not invalidate the assumptions made in the initial questions.

The marked different effects between communication services and information technology goods also mirror the fact that ICT goods and services do not necessarily follow a uniform pattern of consumption. Looking at elementary components is certainly useful for a better understanding of the mechanisms at stake.

Those findings may also call for revisiting in detail the existing ICT expenditure categories in the consumption surveys, especially for cases where the frontier between goods and services is blurring.

This version will be completed by *i)* including the United States in the analysis, *ii)* looking at the effects of the determinants on the share of ICT expenditure devoted to ICT goods, *iii)* looking at the effects of the determinants on hardware and software that can be isolated in the case of United States and Canada, and *iv)* looking at the effects of the existing computer and mobile phone equipment of the households on their ICT goods and services expenditures.

ANNEX | ICT Expenditures

Definition and Country Data

1 ICT EXPENDITURES: DETAILS AND COMPONENTS

1.1 ICT expenditures: COICOP items

COICOP Categories for detailed ICT goods and services:

Communication expenditures

08.2.0 Telephone and fax equipment:

- Purchases of telephones, radio-telephones, telefax machines, telephone-answering machines and telephone loudspeakers.
- Repair of such equipment.

Excludes: telefax and telephone-answering facilities provided by personal computers (09.1.3).

08.3.0 Telephone and telefax services:

- Installation and subscription costs of personal telephone equipment.
- Telephone calls from a private line or from a public line (public telephone box, post office cabin, etc.); telephone calls from hotels, cafés, restaurants and the like.
- Telegraphy, telex and telefax services.
- Information transmission services; Internet connection services.
- Hire of telephones, telefax machines, telephone-answering machines and telephone loudspeakers.

Includes: radio-telephony, radio-telegraphy and radiotelex services. Excludes: telefax and telephone answering facilities provided by personal computers (09.1.3).

Audio-visual, photographic and information processing equipment

Definitions COICOP:

- 09.1 Audio-visual, photographic and information processing equipment,
- 09.1.1 Equipment for the reception, recording and reproduction of sound and pictures,
- 09.1.2 Photographic and cinematographic equipment and optical instruments,
- 09.1.3 Information processing equipment,
- 09.1.4 Recording media,
- 09.1.5 Repair of audio-visual, photographic and information processing equipment.

Information and Communication technologies expenditures are made from the sum of communication expenditures and audio-visual, photographic and information processing equipment expenditures.

- 09.4.2 – Cultural services (*).

Services provided by:

- cinemas, theatres, opera houses, concert halls, music halls, circuses, sound and light shows,
- museums, libraries, art galleries, exhibitions,
- historic monuments, national parks, zoological and botanical gardens, aquaria,
- hire of equipment and accessories for culture, such as television sets, video cassettes, etc.,
- television and radio broadcasting, in particular licence fees for television equipment and subscriptions to television networks,
- services of photographers such as film developing, print processing, enlarging, portrait photography, wedding photography, etc.

Includes: services of musicians, clowns, performers for private entertainments.

(*) When available, the only part which will be included in the ICT expenditures will be “hire of equipment and accessories for culture, such as television sets, video cassettes, etc.” and “television and radio broadcasting, in particular licence fees for television equipment and subscriptions to television networks”.

1.2 ICT expenditures items selected by countries

European countries (including Czech Republic)

For the European countries, according to the available detail level (Eurostat, 2006), the following items have been selected:

- Telephone and telefax equipment (HE082),
- Telephone and telefax services (HE083),
- Audio-visual, photographic and information processing equipment (HE091),
- Television and radio taxes and hire of equipment (HE09423).

The various ICT components are defined as follow:

- *IT goods* include Audio-visual, photographic and information processing equipment (HE091) less Repair of audio-visual, photographic and information processing equipment (HE0915),
- *IT services* include Television and radio taxes and hire of equipment (HE09423) and Repair of audio-visual, photographic and information processing equipment (HE0915),
- *Communication goods* include Telephone and telefax equipment (HE082),
- *Communication services* include Telephone and telefax services (HE083).

Canada

For Canada, according to the available detail level (Statistics Canada, 2008a), the ICT expenditures and their components are defined in the Table A1.

Table A1 ICT expenditures and their components in Canada

Communication		IT	
Goods	Services	Goods	Services
Purchases of communications equipment H004	Telephone services H005	Computer equipment and supplies M110	Internet services H009
	Cellular services H008	Photographic goods (M116-M199)	On-line services H070
		Audio equipment M150	Photographic services M199
		Pre-recorded media M151	Cablevision and satellite services M165
		Blanc media M187	
		Televisions and other video equipment M186	
		Rental of DVDs, video tapes and video games M156	
Rental of home entertainment equipment M157			

Source: OECD, based on Statistics Canada SHS Data Dictionary 2006 Data Model Entity (PUMF)

Switzerland

For Switserland, the most detailed level (level 5) of the classification used by the Household Budget Survey has been used. Consumptions expenditures are classified according to COICOP, as established by EUROSTAT. ICT expenditures items are in line with the other European countries.

2 COUNTRY DATA SPECIFICITIES

2.1 European countries

Data source

The source of the data is the Eurostat database on Household Budget Survey. The reference year is 2005 (Eurostat, 2006).

Income and equivalent income

Income refers to the net income (total income from all sources including non-monetary components minus income taxes).

Equivalent income of the household is used instead of income of the household.

Equivalent income of the household has been calculated by dividing the income of the household by the equivalent size of the household and multiplying the result by the household size:

$$\text{Equivalent income} = \text{income} / \text{household equivalent size} \times \text{household size.} \quad (1)$$

Household size refers to the sum of household members.

Household equivalent size is established by allocating weighting coefficients to the household's members according to their demographic characteristics. Given the existence of big differences in the sizes and structures of households, comparability can be improved by using expenditure or income by adult equivalent. The OECD scale is used, which consists in allocating the following weightings to persons in the calculation of the "equivalent household's size":

- first adult in the household¹ = 1.0,
- each adult thereafter (aged over 13) = 0.7,
- each child (13 or under) = 0.5.

Calculation rule:

$$\text{Household equivalent size} = 0.3 + (0.7 \times A) + (0.5 \times B), \quad (2)$$

A = Sum of household members where MB03 > 13,

B = Sum of household members where MB03 < 14.

- ¹ The first adult of the household counts by 1 because of the addition of the constant term 0.3, assuming that each household must have at least one adult.

Education level of the reference person

The education level of the reference person corresponds to the level of studies completed by the reference person, using the ISCED (International Standard Classification of Education) nomenclature:

d_edu_high: higher education (ISCED = 5, 6),

d_edu_med: upper secondary education and post-secondary non-tertiary education (ISCED = 3, 4),

d_edu_low: none or primary education and lower secondary education (ISCED = 1, 2).

In selection and regression, d_edu_low is used as reference.

Geographical area

Geographical area refers to the population density domain. It has been divided in 3 categories:

d_geo_high: densely populated (at least 500 inhabitants / km²),

d_geo_med: intermediate (between 100 and 499 inhabitants / km²),

d_geo_low: sparsely populated (less than 100 inhabitants / km²).

In selection and regression, d_geo_low is used as reference.

Reference person

As stated in Eurostat (2006), "reference person" is a European concept, which usually differs from the national concept of "head of household". The reference person is the adult (16+) contributing most to the total income of the household. In that sense, the reference person can also be designated as "main income earner".

2.2 Czech Republic

The source of the data is the *Czech Household Budget Survey (HBS)*, with 2006 as reference year. The variables are in line with the Eurostat definitions. The methodology of the *Czech Household Budget Survey (HBS)* is provided on the Czech Statistical Office website.⁵

2.3 Switzerland

The source of the data is the *Household Budget Survey (HBS)*. The reference year is 2005. The geographical area (population density domain) is not available. Education level of the reference person has been aligned with the European countries, based on the education short classification (EWL) and using a mapping of national educational programmes with ISCED. Income refers to household income before taxes. It includes income for household from earnings, investment, and from transfer payments. The methodology of the *Household Budget Survey (HBS)* is provided on the Swiss Federal Statistical Office web site.⁶

2.4 Canada

Data source

The source of the data is the *Survey of Household Spending PUMF 2006*, from Statistics Canada (Statistics Canada, 2008b and 2008c).

Age of the reference person

Age of the reference person is provided by groups. The variable has been modified as follows: For age group of less than 25 year, age value has been put to 22. For age group 25–29, age value has been put to 27. For age group 30–34, age value has been put to 32 (and similarly for other age groups). For age group of 85 and over, age value has been put to 92.

Income

Income refers to household income before taxes. It includes income for household from earnings, investment, government transfer payments and other sources. It excludes personal income tax refunds (Statistics Canada, 2008a).

Education level of the reference person

Statistics Canada provided a concordance table between original codes used in the Canadian micro-data file and the 3 levels of ISCED used by Eurostat for the European countries, as follow:

Initial code	Description	ISCED	Education level
1	No degrees, certificates or diplomas	0,1,2	Low
2	Secondary (high) school diploma or equivalent	3	Medium
3	Trade / vocational certificate	4	Medium
4	Apprenticeship certificate	4	Medium
5	Community college, CEGEP or nursing school diploma	5B	High
6	University certificate or diploma below Bachelor's	5B	High
7	Bachelor's degree (B.A., B.Sc., B.Ed.)	5A	High
8	University degree, certificate or diploma above a Bachelor's	5A/6	High

Source: Statistics Canada, Culture, Tourism and the Centre for Education Statistics Division

⁵ <<http://www.czso.cz/eng/redakce.nsf/i/home>>.

⁶ <http://www.bfs.admin.ch/bfs/portal/en/index/infothek/erhebungen__quellen/blank/blank/habe/02.html>.

In selection and regression, d_edu_low is used as reference.

Urban-rural

Instead of the 3 different levels of population density provided for the European countries, the urban area indicator is used. Urban area is defined as follow (Statistics Canada, 2008c):

For the Survey of Household Spending (based on the LFS sampling frame), urban areas include:

- All large metropolitan areas (even though they do contain some rural areas);
- Most small metropolitan areas (also called census agglomerations). In some cases, where a census agglomeration contains a large rural population, only the urban portion is considered urban;
- Urban areas based on the census definition: “Urban areas have minimum population concentrations of 1 000 and a population density of at least 400 per square kilometer based on the previous census population counts”.

Rural area

All territory outside urban areas is considered rural. Taken together, urban and rural areas cover all of Canada.

In selection and regression, d_rural is used as reference.

Reference person

The household member being interviewed chooses which household member should be listed as the reference person after hearing the following definition. “The household reference person is the member of the household mainly responsible for its financial maintenance (e.g. pays the rent, mortgage, property taxes, and electricity). This person can be either male or female. When all members of the household share equally, any member may be shown as the reference person.” This person must be a member of the household at the time of the interview (Statistics Canada, 2008c).

Table A2 Variables by country

AUSTRIA						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	3 830	6.584796	21.7163567	10 105 606.3	-0.787144	10.59144
ln_IT_serv	1 698	6.93203325	11.0802667	5 036 033.22	3.94019	9.47311
ln_com_goods	215	6.6212685	22.9137602	539 090.786	3.07269	8.83054
ln_com_serv	3 835	7.12990086	16.7945892	1 1075 188.3	1.20683	9.64398
ln_eq_inc	8 400	9.37619	63.47003	32 722 895	0	12.20797
d_edu_high	7 719	0.13003	6.87484	419 300	0	1
d_edu_med	7 719	0.6377	9.825	2 056 398	0	1
d_geo_high	8 400	0.39996	9.98614	1 395 870	0	1
d_geo_med	8 400	0.2361	8.65699	824 000	0	1
d_child	8 400	0.28799	9.23066	1 005 102	0	1
age	8 400	50.51617	346.34064	176 301 428	18	99
d_cple	8 400	0.41706	10.05103	1 455 554	0	1
d_male	8 400	0.64429	9.7586	2 248 572	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	4 570	3 830				
d_IT_serv	6 702	1 698				
d_com_goods	8 185	215				
d_com_serv	4 565	3 835				

BELGIUM						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	1 600	5.99260592	30.6841199	4 702 133.29	1.79176	10.03764
ln_IT_serv	3 093	5.18243459	13.8418797	8 058 731.89	1.94018	11.90543
ln_com_goods	406	5.73104568	15.1197954	1 159 543.97	1.09861	7.83634
ln_com_serv	2 926	6.616369	18.91293	9 492 543.43	1.79176	9.38568
ln_eq_inc	3 550	10.46827	17.26379	18 358 154	0	12.91155
d_edu_high	3 496	0.43405	11.02494	750 622	0	1
d_edu_med	3 496	0.28224	10.01189	488 089	0	1
d_geo_high	3 550	0.59753	10.90109	1 047 894	0	1
d_geo_med	3 550	0.35734	10.6526	626 667	0	1
d_child	3 550	0.29713	10.15861	521 074	0	1
age	3 550	50.0539	346.87104	87 779 294	19	86
d_cple	3 550	0.45079	11.06065	790 556	0	1
d_male	3 550	0.65296	10.58171	1 145 101	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	1 950		1 600			
d_IT_serv	457		3 093			
d_com_goods	3 144		406			
d_com_serv	624		2 926			

CANADA						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	12 359	6.4182683	41.7447695	69 953 797.3	0.693147	10.1973
ln_IT_serv	13 647	6.56624926	23.9093233	77 683 206.9	0.693147	9.15736
ln_com_goods	4 369	4.71529179	26.9094043	18 014 131	0.693147	8.16052
ln_com_serv						
ln_inc	14 618	10.82036	24.92811	137 807 166	5.29832	15.03929
d_edu_high	14 635	0.44691	14.67833	5 700 643	0	1
d_edu_med	14 635	0.37537	14.2958	4 787 998	0	1
d_urban	14 018	0.87686	9.88864	11 131 235	0	1
d_child	14 635	0.2901	13.39799	3 700 353	0	1
agebis	14 635	49.68506	487.5916	633 761 084	22	92
d_male	14 635	0.50217	14.76163	6 405 452	0	1
d_comp	14 635	0.75387	12.71747	9 616 002	0	1
d_mob	14 635	0.67709	13.80488	8 636 660	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	2 272		12 346			
d_IT_serv	983		13 635			
d_com_goods	10 254		4 364			
d_com_serv	208		14 410			

CZECH REPUBLIC						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	2 222	10.642461	1.70823586	22 470.4018	5.64706	15.00042
ln_IT_serv	2 793	10.9536781	0.59414348	30 670.1048	3.34448	13.24215
ln_com_goods	899	10.1979024	1.42524059	8 593.39484	3.34448	13.47027
ln_com_serv	2 919	12.2471653	0.81714881	35 493.5891	8.21201	14.70736
ln_eq_inc	2 967	14.4183297	0.65712332	42 753.8668	11.5511	17.6938
d_edu_high	2 967	0.11234	0.31574	333.1058	0	1
d_edu_med	2 967	0.37329	0.48362	1.11E+03	0	1
d_geo_high	2 967	0.37649	0.48444	1 116	0	1
d_geo_med	2 967	0.24209	0.42829	717.8559	0	1
d_child	2 967	0.46749	0.79371	1 386	0	4
age	2 967	52.09347	15.72286	154 470	20	90
d_cple	2 967	0.63774	0.48059	1 891	0	1
d_male	2 967	0.71147	0.45302	2 110	0	1
d_comp	2 967	0.43338	0.49548	1 285	0	1
d_mob	2 967	0.88273	0.3217	2 618	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	745		2 222			
d_IT_serv	174		2 793			
d_com_goods	2 068		899			
d_com_serv	48		2 919			

DENMARK						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	1 785	5.75374128	71.0789005	10 084 188.4	-1.95099	10.10977
ln_IT_serv	2 351	5.99492692	19.148077	14 681 279.3	2.47211	9.1984
ln_com_goods	371	4.00167026	61.2088093	1 495 149.38	-2.0755	8.55514
ln_com_serv	2 384	6.35090735	28.7544919	15 805 295.8	-1.5901	9.42035
ln_eq_inc	2 449	10.59586	28.30042	27 054 646	0	12.84208
d_edu_high	2 378	0.2077	12.88444	498 046	0	1
d_edu_med	2 378	0.47835	15.86597	1 147 051	0	1
d_geo_high	2 449	0.41163	15.89372	1 051 019	0	1
d_geo_med	2 449	0.31017	14.93886	791 961	0	1
d_child	2 449	0.26052	14.17517	665 180	0	1
age	2 449	49.80541	579.37374	127 169 329	17	92
d_cple	2 449	0.46891	16.1167	1 197 284	0	1
d_male	2 449	0.5937	15.86187	1 515 904	0	1
d_comp	2 449	0.73027	14.33351	1 864 621	0	1
d_mob	2 448	0.82725	12.21028	2 111 827	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	663		1 785			
d_IT_serv	98		2 351			
d_com_goods	2 078		371			
d_com_serv	55		2 384			

FINLAND						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	2 729	6.26765751	27.9748257	9 709 463.44	1.63594	9.29198
ln_IT_serv	3 864	5.40745698	7.05382313	12 722 004.7	3.93852	8.91027
ln_com_goods	1 525	4.94802058	22.7736373	4 284 957.8	1.59672	8.17597
ln_com_serv	3 961	6.34118089	19.5269664	15 344 423	2.28987	9.03745
ln_eq_inc	4 007	10.40418	18.40887	25 542 269	7.68891	13.17957
d_edu_high	4 007	0.29733	11.31529	729 946	0	1
d_edu_med	4 007	0.40441	12.14941	992 829	0	1
d_geo_high	4 007	0.28849	11.21565	708 234	0	1
d_geo_med	4 007	0.16509	9.19077	405 299	0	1
d_child	4 007	0.25497	10.7895	625 949	0	1
age	4 007	50.79765	436.51845	124 708 234	17	96
d_cple	4 007	0.46375	12.34514	1 138 516	0	1
d_male	4 007	0.6025	12.11484	1 479 135	0	1
d_comp	4 007	0.63672	11.90597	1 563 152	0	1
d_mob	4 007	0.91445	6.92388	2 244 986	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	1 278		2 729			
d_IT_serv	143		3 864			
d_com_goods	2 482		1 525			
d_com_serv	46		3 961			

FRANCE						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	5 031	5.8405576	64.287826	67 241 311.7	-0.7120671	9.87482
ln_IT_serv	7 737	5.35398937	39.4208337	98 541 105.9	2.46599	9.21083
ln_com_goods	2 071	4.3938463	70.9240474	20 933 333.9	-0.0189199	9.34174
ln_com_serv	9 816	6.50230041	40.158912	154 621 466	2.28367	9.86203
ln_eq_inc	10 240	10.42588	34.53472	259 796 116	7.33302	13.67631
d_edu_high	10 240	0.19854	19.67877	4 947 349	0	1
d_edu_med	10 240	0.37579	23.89291	9 364 069	0	1
d_geo_high	10 240	0.40949	24.25862	10 203 785	0	1
d_geo_med	10 240	0.13455	16.83441	3 352 842	0	1
d_child	10 240	0.32009	23.01407	7 976 163	0	1
age	10 240	52.13011	858.636	1 298 998 080	16	98
d_cple	10 240	0.4881	24.65915	12 162 626	0	1
d_male	10 240	0.64746	23.56909	16 133 568	0	1
d_comp	10 240	0.48981	24.66102	12 205 302	0	1
d_mob	10 240	0.48553	24.65581	12 098 623	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	8 169		2 071			
d_IT_serv	2 503		7 737			
d_com_goods	8 169		2 071			
d_com_serv	423		9 816			

GREECE						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	2 071	5.67494524	26.4099317	7 370 206.08	2.37993	9.70445
ln_IT_serv	6 536	4.04174978	19.1268141	16 088 213.3	3.26588	7.73548
ln_com_goods	218	4.76443913	21.1225633	632 675.589	2.33286	6.71894
ln_com_serv	6 525	6.62190962	19.6186673	26 333 108.9	4.4651	9.53101
ln_eq_inc	6 555	10.26827	17.03429	41 000 854	7.09008	12.36437
d_edu_high	6 553	0.16618	9.18815	663 371	0	1
d_edu_med	6 553	0.29584	11.26594	1 180 960	0	1
d_geo_high	6 555	0.4319	12.22638	1 724 545	0	1
d_geo_med	6 555	0.03498	4.53481	139 665	0	1
d_child	6 555	0.31926	11.50685	1 274 783	0	1
age	6 555	53.64969	424.48437	21 4221 321	15	98
d_cple	6 555	0.43096	12.2232	1 720 821	0	1
d_male	6 555	0.74779	10.71924	2 985 909	0	1
d_comp	6 555	0.29478	11.25396	1 177 043	0	1
d_mob	6 555	0.7257	11.01244	2 897 714	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	4 484		2 071			
d_IT_serv	19		6 536			
d_com_goods	6 337		218			
d_com_serv	30		6 525			

HUNGARY						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	3 163	5.01536862	20.750045	6 220 812.46	0.96026	8.34934
ln_IT_serv	5 053	5.04669579	10.9309124	10 519 080.4	1.75877	7.91097
ln_com_goods	1 348	4.30001448	15.1804637	2 102 298.58	-1.26514	6.3286
ln_com_serv	8 590	5.81816795	16.4260223	20 983 571.8	1.34598	8.31933
ln_eq_inc	9 058	9.03015	14.53043	34 649 456	0	12.00055
d_edu_high	9 058	0.19443	8.1459	746 033	0	1
d_edu_med	9 058	0.26628	9.09798	1 021 752	0	1
d_geo_high	9 058	0.36575	9.91359	1 403 415	0	1
d_geo_med	9 058	0.3172	9.57907	1 217 136	0	1
d_child	9 058	0.2787	9.22863	1 069 413	0	1
age	9 058	52.42769	343.02272	201 169 615	18	98
d_cple	9 058	0.32282	9.62366	1 238 679	0	1
d_male	9 058	0.56784	10.19634	2 178 836	0	1
d_comp	9 058	0.34606	9.79157	1 327 850	0	1
d_mob	9 058	0.72994	9.13866	2 800 843	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	5 895		3 163			
d_IT_serv	4 005		5 053			
d_com_goods	7 710		1 348			
d_com_serv	468		8 590			

IRELAND						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	3 246	6.45159309	16.5782844	4 208 929.01	1.66988	11.3014
ln_IT_serv	5 920	5.97216334	10.0241993	7 241 307.77	-0.632703	8.7395
ln_com_goods	2 256	5.02013747	10.9001822	2 255 301.78	1.44674	8.59685
ln_com_serv	6 786	6.86000725	15.9468688	9 751 452.29	0.753592	9.29548
ln_eq_inc	6 884	10.90473	13.68633	15 761 852	0	14.13496
d_edu_high	6 884	0.29089	6.58157	420 461	0	1
d_edu_med	6 884	0.24752	6.25404	357 771	0	1
d_geo_high	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_geo_med	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_child	6 884	0.34843	6.9047	503 622	0	1
age	6 884	50.5849	237.38918	73 116 119	15	93
d_cple	6 884	0.43472	7.18364	628 356	0	1
d_male	6 884	0.61861	7.03883	894 145	0	1
d_comp	6 884	0.54379	7.21781	786 003	0	1
d_mob	6 884	0.84448	5.25169	1 220 618	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	3 638		3 246			
d_IT_serv	964		5 920			
d_com_goods	4 628		2 256			
d_com_serv	98		6 786			

NETHERLANDS						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	1 328	5.92093095	1.22777775	7 694.77466	2.17478	9.26852
ln_IT_serv	318	4.8079025	0.83791815	1 447.04793	2.72296	7.61367
ln_com_goods	513	4.56684547	0.65736261	2 235.16141	3.23379	6.67969
ln_com_serv	1 543	6.55827623	0.65837806	10 115.4494	3.00663	9.072
ln_eq_inc	1 570	10.21465	0.92248	16 037	0	12.25358
d_edu_high	1 561	0.32204	0.46756	503.03033	0	1
d_edu_med	1 561	0.55821	0.49692	871.94349	0	1
d_geo_high	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_geo_med	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_child	0	.	.	.	.	.
age	1 570	48.51546	15.31503	76 169	21	80
d_cple	1 570	0.51737	0.49986	812.27593	0	1
d_male	1 570	0.69975	0.45851	1 099	0	1
d_comp	1 570	0.75425	0.43067	1 184	0	1
d_mob	0	.	.	.	.	.
Non spending (=0)			Spending (=1)			
d_IT_goods	242		1 328			
d_IT_serv	1 251		318			
d_com_goods	1 049		513			
d_com_serv	27		1 543			

NORWAY						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	2 487	6.54907147	1.61168721	28 559.7803	-2.1749	11.0986
ln_IT_serv	633	6.9330206	1.73479662	7 766.23102	3.48009	10.04464
ln_com_goods	1 239	4.54154347	2.82099959	9 212.83885	-2.16397	9.13012
ln_com_serv	1 343	7.43745396	1.28712027	17 640.5995	2.52827	10.1428
ln_eq_inc	3 376	12.68875	2.25626	82 420	0	15.49446
d_edu_high	3 331	0.34631	0.65925	2 214	0	1
d_edu_med	3 331	0.50447	0.69277	3 225	0	1
d_geo_high	3 376	0.51162	0.69346	3 323	0	1
d_geo_med	3 376	0.16995	0.52106	1 104	0	1
d_child	3 376	0.30364	0.63792	1 972	0	1
age	3 376	46.61104	21.54417	302 762	18	87
d_cple	3 376	0.33327	0.65395	2 165	0	1
d_male	3 376	0.6162	0.67466	4 003	0	1
d_comp	3 376	0.70814	0.63069	4 600	0	1
d_mob	2 245	0.93433	0.34404	4 045	0	1
Non spending (=0)			Spending (=1)			
d_IT_goods	889		2 487			
d_IT_serv	2 743		633			
d_com_goods	2 137		1 239			
d_com_serv	2 033		1 343			

SLOVAK REPUBLIC						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	622	4.51625853	32.8215105	112 5671.5	1.30822	9.94398
ln_IT_serv	4 111	3.92592474	12.9247025	6 441 508.78	1.82741	7.23481
ln_com_goods	55	5.73003885	20.7735358	122 683.688	3.84232	7.81888
ln_com_serv	3 958	5.48052073	15.5465995	8 638 517.94	1.0289	8.31205
ln_eq_inc	4 710	9.00302	12.66753	17 108 745	6.1449	11.42473
d_edu_high	4 710	0.14072	6.98538	267 407	0	1
d_edu_med	4 710	0.72977	8.92098	1 386 798	0	1
d_geo_high	4 710	0.26469	8.86242	502 991	0	1
d_geo_med	4 710	0.42047	9.91643	799 026	0	1
d_child	4 710	0.38757	9.78709	736 511	0	1
age	4 710	49.5244	312.7075	94 112 899	17	96
d_cple	4 710	0.39418	9.8168	749 075	0	1
d_male	4 710	0.60131	9.83596	1 142 697	0	1
d_comp	4 710	0.35374	9.605	672 231	0	1
d_mob	4 710	0.79958	8.04185	1 519 460	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	4 088		622			
d_IT_serv	599		4 111			
d_com_goods	4 655		55			
d_com_serv	752		3 958			

SPAIN						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	5 129	4.71021544	76.0831709	40 263 742.8	0.0332466	8.6287
ln_IT_serv	3 230	3.98295701	83.9193388	21 169 003.1	0.0332466	7.81564
ln_com_goods	1 401	3.97700598	64.4638812	9 653 785.47	0.0332466	7.28884
ln_com_serv	8 709	6.17725972	31.91825	87 337 783.9	0.0332466	8.45701
ln_eq_inc	8 881	10.17436	23.58545	146 736 676	0	11.92429
d_edu_high	8 881	0.18377	15.60828	2 650 402	0	1
d_edu_med	8 881	0.14138	14.04117	2 039 005	0	1
d_geo_high	8 881	0.50607	20.14872	7 298 682	0	1
d_geo_med	8 881	0.20271	16.2015	2 923 529	0	1
d_child	8 881	0.33994	19.08987	4 902 721	0	1
age	8 881	55.21051	621.22543	796 257 577	18	98
d_cple	8 881	0.4247	19.9204	6 125 150	0	1
d_male	8 881	0.78003	16.69344	11 249 775	0	1
d_comp	8 876	0.46253	20.09516	6 668 082	0	1
d_mob	0	.	.	.	.	.
N Non spending (=0)			N Spending (=1)			
d_IT_goods	3 752		5 129			
d_IT_serv	5 651		3 230			
d_com_goods	7 480		1 401			
d_com_serv	172		8 709			

SWEDEN						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	1 362	6.38683327	43.9708966	14 349 225.7	2.63944	9.32393
ln_IT_serv	1 968	5.74755892	24.099841	20 367 229.1	4.02573	8.75936
ln_com_goods	657	5.16436234	33.1084675	5 476 075.82	3.98651	9.62397
ln_com_serv	2 049	6.50898562	29.7385101	24 694 219.7	3.62983	8.68225
ln_eq_inc	2 079	10.31928	38.68247	40 079 169	0	12.80687
d_edu_high	2 079	0.3513	20.63819	1 364 400	0	1
d_edu_med	2 079	0.42152	21.34838	1 637 140	0	1
d_geo_high	2 079	0.25444	18.82984	988 228	0	1
d_geo_med	2 079	0.14737	15.32482	572 368	0	1
d_child	2 079	1	0	3 883 911	1	1
age	2 079	48.97739	687.40494	190 223 821	18	89
d_cple	2 079	0.50594	21.6148	1 965 035	0	1
d_male	2 079	0.61207	21.06637	2 377 216	0	1
d_comp	0	.	.	.	.	.
d_mob	2 079	0.92045	11.69853	3 574 947	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	713		1 362			
d_IT_serv	111		1 968			
d_com_goods	1 422		657			
d_com_serv	30		2 049			

SWITZERLAND

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	1 350	4.28461563	43.2403598	5 758 717.35	0.405465	8.966726
ln_IT_serv	2 960	3.79941247	13.8624474	11 609 170.1	1.07044	6.21936
ln_com_goods	157	4.20070947	38.5436374	645 343.25	0	6.68324
ln_com_serv	3 075	4.78139688	24.0237847	15 263 488.3	1.22009	7.58943
ln_inc	3 087	8.92661	19.71894	28 597 926	4.83898	11.55437
d_edu_high	3 087	0.32683	15.11291	1 047 044	0	1
d_edu_med	3 087	0.5535	16.01755	1 773 219	0	1
d_geo_high	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_geo_med	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_child	3 087	0.32632	15.10684	1 045 412	0	1
age	3 087	50.65929	528.63585	162 295 713	18	96
d_cple	3 087	0.6065	15.74035	1 943 016	0	1
d_male	3 087	0.69342	14.85586	2 221 476	0	1
d_comp	3 087	0.07717	8.59802	247 211	0	1
d_mob	3 087	0.18237	12.44185	584 267	0	1
N Non spending (=0)			N Spending (=1)			
d_IT_goods	1 737		1 350			
d_IT_serv	127		2 960			
d_com_goods	2 930		157			
d_com_serv	12		3 075			

UNITED KINGDOM

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
ln_IT_goods	2 083	6.50565865	2.4473229	50 597.9517	2.94504	11.1015
ln_IT_serv	5 932	5.83512091	1.51207411	126 124.133	2.02875	8.608
ln_com_goods	207	6.79625834	2.67279074	5 147.12145	3.46383	9.73851
ln_com_serv	6 480	6.43731438	1.5876684	152 612.375	-0.273837	9.48103
ln_eq_inc	6 785	10.22842	1.66001	253 652	0	14.14603
d_edu_high	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_edu_med	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
d_geo_high	6 245	0.77083	0.82617	18 597	0	1
d_geo_med	6 245	0.15109	0.70399	3 645	0	1
d_child	6 785	1	0	24 799	1	1
age	6 785	51.89904	32.99095	1 287 034	16	98
d_cple	6 785	0.3261	0.89628	8 087	0	1
d_male	6 785	0.61472	0.93046	15 244	0	1
d_comp	6 785	0.64503	0.91486	15 996	0	1
d_mob	0	.	.	.	.	.
N Non spending (=0)			N Spending (=1)			
d_IT_goods	4 702		2 083			
d_IT_serv	853		5 932			
d_com_goods	6 578		207			
d_com_serv	305		6 480			

Source: See Table 1

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