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Summary

The research question addressed by this paper is a simple one: are European consumers happy with the services provided by the utilities after two decades of reforms? We focus on electricity, gas, water, telephone in the EU 15 Member States. The variables we analyse are consumers' satisfaction with accessibility, price and quality, as reported in three waves of Eurobarometer survey, 2000-2002-2004, comprising around 47,000 observations. We use ordered logit models to analyze the impact of privatization and regulatory reforms, as represented by an OECD dataset, controlling for individual and country characteristics. Our results do not support a clear association between consumers' satisfaction and a standard reform package of privatization, vertical disintegration, liberalization.

Keywords: Consumers' Satisfaction, Gas, Electricity, Telephone, Water, Eurobarometer

JEL Classification: L94, L95, L96, L50

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1. Introduction

The research question addressed by this paper is a simple one: are European consumers happy with the services provided by the utilities after two decades of reforms? Privatization, vertical disintegration and liberalization have extensively reshaped the structure of network industries (Newbery,2000), such as telephone, electricity, gas, and water in the European Union since the 1980s, see e.g. Martin, Roma and Vansteenkiste (2005) for a survey. While empirical literature has usually focussed on changes in efficiency of the industry, rather surprisingly the research on the impact of utility reforms on consumers is less developed (with some notable exceptions, such as the research by Catherine Waddams and associates, see e.g. recently Brazier et al 2006). Moreover, most of the empirical literature on this subject deals with individual countries, because of the difficulty of working with comparable cross-country evidence.

While applied welfare economist would turn to objective evidence as their first choice of data for empirical analysis and evaluation of reforms, in this paper we explore perceptions by consumers, i.e. subjective data, on happiness with three dimensions of services of general interest (SGI): accessibility,price and quality. Thus we do not directly study whether utility reforms explain variations in welfare of consumers across countries and time periods, but whether they are correlated to their perceptions. There are two reasons to consider data on attitudes. First, because they are important per se. Policy-makers and regulators are well aware that reforms of services of general interests are in the forefront of public debate in the European Union (the widespread concern about the Bolkenstein Directive on the liberalization of services being a clear example), and it is then important to understand to what extent EU citizens are satisfied with the provision of SGI, changes over time and variations across countries. Second, subjective data can be a complement to objective evidence in order to evaluate the welfare impact of reforms. Ideally, for example, one would use both detailed microdata on price paid and expenditure by households, or on objectively measured quality, along with individual attitudes on these dimension of SGI, to test economic welfare change and compare them with 'happiness' measures. If the two measures do not coincide, this fact would open the way to further research to understand whether the cognitive process by the consumer is biased, or whether the objective evidence does not capture aspects known to the user (e.g. aspects of quality, or of price discrimination not reflected in average price indexes).

While in future research work we shall explore the combination of objective and subjective evidence to evaluate utility reforms, in this paper we focus exclusively on attitudes. We use three waves of Eurobarometer Surveys, 2000-2002-2004, for the EU 15 countries, and try to test the impact of privatization and regulatory reforms on attitudes of users of electricity, gas, telephone, water. To do so, after a discussion of our research motivation (Section 2), presentation of Eurobarometer data (Section 3), and descriptive statistics (Section 4), we estimate a set of ordered logit models (Section 5). We regard the results as a preliminary exploration and in the Concluding section we discuss them and future research needed.

2. Research motivation

Over the last twenty years governments and lawmakers of the Member States of the European Union have embarked on a wide range of reforms of public services. These include electricity, gas, telecommunications, water, railways, other public transport modes, postal services, and other services of general interest, previously fully or partly nationalized. Following a dramatic reversal of policy trends, initiated in Great Britain in the early '80s (Florio, 2004), European governments have more or less enthusiastically or reluctantly divested their ownership of assets in network industries, and adopted large-scale privatization policies.

While the EU legislation is fairly neutral about ownership itself (except for its unambiguous hostility to uncompetitive State aids to public corporations), it strongly supports liberalization of service industries, most of them originally excluded by the scope of the directives on the European markets integration. A continuous flow of EU directives (the framework legislation to be translated into national laws), have provided for the opening of the service markets to competition, thus attempting to break legal or de facto monopoly power of the incumbent firms. In addition, antitrust powers of the European Commission have backed national competition policies. Instrumental to liberalization policies, a set of structural changes have been made compulsory by EU legislation, most notably the vertical disintegration of network industries. An entirely new set of regulatory institutions has emerged as substitutes or complements of the competencies of ministries. A new paradigm has emerged, that tends to see privatization, liberalization, and vertical disintegration as germane policies.

While the overall trend is clear and widespread, its timing and implementation shows considerable variations across the fifteen 'old' EU Members States and the ten new members that acceded in 2004. Moreover the outcome of the reforms is still under scrutiny. Supporters of the new paradigm have little doubts about the net social benefits of the reform process, but criticism on it is far from being overwhelmed by evidence. Some of the criticism against privatization and liberalization may be a reflection of vested interests in the incumbents, such as the trade unions or political patronage. There are however vested interests in the privatization and liberalization camp as well, and the political economy of the process is indeed a complex one (Bortolotti and Pinotti, 2003). Moreover, the economics of regulated industries, and occasional observation, show that under some circumstances the reforms can fail, for example when regulatory institutions are unable to contain new forms of market dominance after divestiture of state owned enterprises by privatized incumbents. Vertical disintegration is a particular area of concern, because there are indeed substantial costs associated to the separation of fixed capital and its operation: these costs that need to be evaluated case by case against the benefits of competition (Newbery, 2000).

Because the jury is still out, the last word on the outcome of the reforms rests ultimately on empirical analysis. Consequently the evaluation of the success or failure of the privatization-vertical disintegration-liberalization paradigm in the EU needs a careful analysis of its impact on society at large.

It is apparent that, while there is a common direction of reform, substantial variations exist over time and across states. Empirical analysis should exploit this variability.

As mentioned above, we are interested in the social outcome of reforms. This would imply a joint considerations of impacts on all social actors, including workers, shareholders, taxpayers, and consumers. Moreover ideally we would need to evaluate general equilibrium effects, because, for example, reforms of the electricity or transport industries may have an

impact on other industries, such as manufacturing.

In order to make the evaluation more manageable, it would seem wise to break down the empirical analysis by types of agents, and focus on first round partial equilibrium impacts (as typically done by applied indirect tax reform literature, see Brau and Florio, 2004). After all, if consumers at large do not benefit directly from reforms, it seems unlikely that indirect benefits to them through impacts on other industries, or benefits to other agents, can change dramatically the evaluation.

If we accept the above working hypothesis (i.e. we focus here on direct welfare changes of consumers) we need suitable welfare measures. In a standard cost-benefit analysis framework this implies to evaluate changes in consumer surplus along individual compensated demand curves, or to recur to other individual marginal welfare measures, such as compensated or equivalent variations. One crucial problem with this approach is that when moving to applied social impact analysis, we need knowledge of individual preferences, and of a social welfare function (to assign a weight to changes in consumer surplus). There are shortcuts to diminish the informative burden of this approach (Banks, Blundell and Lewbel, 1996; Brau and Florio, 2003) and we hope to be able to further explore it in future, but it still needs data not easy available in a European-wide perspective. Moreover, the informative cost of these shortcut welfare measures is that unavoidably individual data are skipped and substituted by more aggregated proxies. One example of the analytical cost involved in the process may clarify this point.

On average, the own price elasticity of demand for water is low, reflecting the feature of a necessity good. Hence, under standard assumptions, the welfare effect of a price change as measured along a compensated demand function is low. Water consumers however are different types, and in turn water uses range from drinking and sanitation to swimming pools and car washing. Thus welfare effects and willingness to pay do change according the income and other traits of users. Moreover, income effects of water tariff rebalancing can be non-marginal for the poor, and income effects should be considered, when no actual compensation is offered to reform losers. For example, the EBRD considers socially affordable water tariffs when expenditures are no more than 3% of income. For the bottom decile, however, the share of the bill on income can be substantially higher than the average, up to 10% in some transition countries, so that doubling water tariffs over some years may virtually extract 20% of income for some users (e.g. pensioners) in transition economies. Looking at the average or representative consumer of public service can thus be misleading to evaluate the social impact of reforms.

The informative burden to look into individual agents is considerable, because we need to know preferences about different uses, price structures for type of users, and their income. This information at EU level is not available in comparable form across Member states. For example, we have comparable national data on the price per kWh by domestic users of electricity broken down by ranges of yearly consumption, but we do not have comparable information on the income of those users, or the number of individuals by each household. In spite of all the debate on reforms of public services, and a huge academic research on the topic, we are very far from availability of the very basic statistical information on welfare measures for utilities, and applied researchers need often to rely on crude and highly aggregate data.

One strategy to preserve some micro information is to adopt a different empirical shortcut: instead of (or as a complement to) relying on *revealed preference* through the estimation of

individual compensated demand functions (or their proxies) we can turn to *stated preferences*, i.e. subjective well-being measures. In other words, we ask consumers direct questions about their self- assessment of satisfaction.

While this may look as a dramatic change of perspective in economic welfare analysis, it is in fact much less strong that it may appear when compared with actual practice of cost-benefit testing in project or policy evaluation. In fact, applied CBA, usually regarded as objective welfare evaluation and often officially endorsed by government agencies, routinely uses contingent evaluation methods e.g. in regulatory impact analysis (see Boardman at al, 2005 for a survey of applied literature). Such methods revolve around eliciting direct information on willingness-to-pay or willingness-to-accept policy changes through surveys on users.

To an applied welfare economist, using revealed or stated preferences is a matter of convenience and data availability more than a fundamental methodological divide.

This discussion of empirical approaches to the evaluation of the welfare impact of policy reforms has a close resemblance with the wider debate on the merits of the 'economics of happiness' (Graham, forthcoming, Layard, 2005). The typical focus of this recent research avenue is the study of the relationship between subjective well being as self assessed by individuals, and objective macroeconomic welfare indicators, such as national income, inflation or unemployment (Frey and Stutzer, 2002).

We propose to use a similar approach in a microeconomic context. Services of general interest are sufficiently important to influence perceptions of well being. While such perceptions can be wrong, they are of course based on the information set available to the respondent, plus an idiosyncratic bias. Thus, when a respondent says, in one country and in one year, that she evaluates the price or quality of water as 'fair', we can assume that she is telling us something about her subjective well being. It seems reasonable to assume that if an individual is happy with the price she pays, and the quality she gets for water, transport, gas and electricity, she is in a better (perceived) welfare position than somebody who feels to be compelled to pay too much for what she gets. The parallelism with happiness economics is here that while the latter research typically relates overall subjective well being to macroeconomic issues, here we focus on satisfaction on specific, albeit important consumption items.

If there are variations across time and across countries in the frequency of those who assess the price of services as fair, we can try to understand the determinants of such differences.

Privatization and regulatory reforms are shocks that have changed the structure of the industry considerably in the EU, we want to test to what extent variability of attitudes are influenced by utility reforms. We turn to the variables to be explained in the next two sections.

3. Eurobarometer data

Eurobarometer public opinion surveys (henceforth, EB) have been conducted on behalf of the Directorate-General for Education and Culture of the European Commission each spring and autumn since autumn 1973. They have included Greece since autumn 1980, Portugal and Spain since autumn 1985, the former German Democratic Republic since autumn 1990 and Austria, Finland and Sweden from spring 1995 onwards.

An identical set of questions is asked to representative samples of the population aged fifteen

years and over in each Member State. In each household, the respondent is drawn at random. All interviews are face-to-face in people's home and in the appropriate national language. A detailed analysis on the Eurobarometer data can be found on the official Eurobarometer Web site.[2] The questions concern various aspects, including support and benefit for EU membership, support for a EU constitution, satisfaction with EU democracy and the single currency, general outlook on life and so on.

The regular sample in standard Eurobarometer surveys is 1000 people per country except Luxembourg (600) and the United Kingdom (1000 in Great Britain and 300 in Northern Ireland). In order to monitor the integration of the five new Länder into unified Germany and the European Union, 2000 persons have been sampled in Germany since the Eurobarometer 34: 1000 in East Germany and 1000 in West Germany.

In each of the 15 Member States, the survey is carried out by national institutes associated with the "INRA (Europe) European Coordination Office". This network of institutes was selected by tender. All institutes are members of the "European Society for Opinion and Marketing Research" (ESOMAR) and comply with its standards.

Each survey comes with a set of weights obtained, using marginal and intercellular weighting, carried out on the basis of the population description provided by EUROSTAT in the Regional Statistics Yearbook (data for 1997 or 1996).

In years 2000, 2002 and 2004[3] the Eurobarometer surveys included some questions concerning Services of General Interest (henceforth, SGI). The SGI considered are mobile telephone service, fixed telephone service, electricity supply service, gas supply service, water supply service, postal service, transport service within towns/cities and rail service between towns/cities. The criteria used to analyse these services are accessibility, the price of the services, the quality of the services, the clarity of the information aimed at EU consumers, how fair the terms and conditions of the contracts applicable to the services are, consumers' complaints and how they are handled and customer service.

The samples are considered as highly representative of national opinions; the composition of the sample comply with the standard rules for surveys (see Table 1).

[2] http://europa.eu.int/comm/public_opinion/

[3] For Europe, 2004 was an exceptional year in several ways. Four major events stand out in particular: the enlargement of the European Union to include ten new Member States; the European elections which have given a new look to the European Parliament which now has 732 MEPs; the prospect of the signature of the new Constitutional Treaty and, finally, the appointment of a new European Commission. This is the first time that such wide-ranging institutional and political changes have occurred in such a short period of time. This Standard Eurobarometer was organised therefore in a particularly eventful European context. Moreover, the results of this survey reflect these changes. Indeed, significant changes have been noted with regard to certain indicators which have been monitored over recent decades. It would appear, therefore, essential to bear in mind the atypical nature of this European year when analysing evolutions with regard to certain questions. Finally, for the first time, the Standard Eurobarometer covers 30 countries: the 25 Member States, the four candidate countries (Bulgaria, Romania, Croatia and Turkey) and the Northern part of Cyprus. It is also worthwhile emphasising that while the Eurobarometer survey of spring 2004 was conducted by EORG, since autumn 2004, the Standard Eurobarometer is carried out by TNS Opinion & Social, a consortium formed by TNS and EOS Gallup Europe.

Table 1. Sample composition for 2000, 2002 and 2004survey

	Sample			Weight Sample		
	2000	2002	2004	2000	2002	2004
Austria	1,005	1,008	1,007	343	346	339
Belgium	1,063	1,074	1,000	430	460	437
Denmark	1,000	1,000	1,059	223	223	222
Finland	1,010	1,000	1,013	214	214	217
France	1,002	1,004	1,001	2,416	2,426	2,235
Germany	2,049	2,045	1,561	3,542	3,651	3,260
Great Britain	1,370	1,320	1,322	2,437	2,472	2,422
Greece	1,004	1,001	1,000	453	453	441
Ireland	1,000	999	1,000	153	153	157
Italy	1,000	992	1,018	2,523	2,503	2,499
Luxembourg	600	599	506	19	19	19
Netherlands	975	998	1,011	654	654	673
Portugal	1,000	1,000	1,000	423	423	410
Spain	1,000	1,000	1,031	1,700	1,700	1,823
Sweden	1,000	1,000	1,000	370	370	375
Total	16,078	16,040	15,529	15,900	16,067	15,529

4. Descriptive statistics

In this paper we restrict our attention to four SGI only (fixed telephone, electricity, gas and water supply services) along the three dimensions of access to services, price and quality of the service. For more details see Manzi, 2006.

4.1. The fixed telephone service

The lowest rate of accessibility satisfaction among European customers in 2000 (Table 1) is in Portugal: 10.69% of citizens declares that there is a difficult access and 5.34% of them that there is no access to fixed telephone network. On the opposite, Denmark and Luxembourg have the better access, with a rate of 98.2% and 100% respectively in 2000 of easy access to fixed telephone network. In terms of variation, between 2000 and 2002 Belgium has the largest positive difference of no access to telephone network and Italy the lowest, between 2002 and 2004 Finland has the largest positive difference of no access to telephone network and Italy the lowest. It is important to notice the different situation in 2004 for Spain and Portugal: in Spain the percentage of easy access decreases and the percentage of difficult access increases, whereas the opposite is in Portugal.

Opinion percentages on fixed telephone service prices are worse than the previous ones (Table 2). The overall percentages of fair judgement on service prices are only 51.65% in 2000, even if this percentage increases slightly in 2002 (+1.56%) but drastically in 2004 (+19,51). The only exception is Greece (-17.12 in 2002 and -11.19 in 2004). Among countries, the top one is Luxembourg with 72.22% in 2000, whereas Italy (with 26.24% of excessive and 45.25% of unfair) has the highest rates in considering unfair or excessive the

price of service, even if they remain almost constant in 2002 and decrease in 2004.

Finally, quality has judged fairly or very bad in Italy, Greece and Portugal and very good in countries like Denmark, Ireland and Luxembourg (Table 3). Quality level is generally considered better than price level: overall, a percentage of 91.41% of the EU15 citizens considers very or fairly good the telephone service quality in 2002.

Table 2. Valid Answers on *fixed telephone service access* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access
Austria	4.97	6.52	88.51	-0.75	-1.70	2.45	-1.10	-0.72	1.81
Belgium	1.67	4.30	94.03	5.81	2.96	-8.77	2.03	1.49	-3.52
Denmark	1.36	0.45	98.18	0.43	-0.01	-0.42	3.22	3.67	-6.90
Finland	1.43	5.24	93.33	3.43	3.50	-6.93	4.18	5.51	-9.69
France	1.42	2.59	96.00	1.68	1.65	-3.33	1.35	2.00	-3.35
Germany	2.30	5.77	91.93	-0.48	1.42	-0.94	1.78	-1.03	-0.76
Great Britain	3.07	1.91	95.01	-0.15	0.76	-0.61	-0.62	0.34	0.28
Greece	1.57	6.73	91.70	-0.23	-1.83	2.06	0.25	-4.91	4.66
Ireland	5.33	2.67	92.00	0.63	-0.68	0.05	-1.33	0.00	1.33
Italy	8.95	3.67	87.38	-6.70	4.07	2.63	-5.48	4.78	0.70
Luxembourg	0.00	0.00	100.00	0.00	0.00	0.00	0.00	5.56	-5.56
Netherlands	0.15	2.94	96.90	0.64	1.53	-2.18	0.61	0.86	-1.46
Portugal	5.34	10.69	83.97	4.12	-1.95	-2.17	-1.64	-5.25	6.89
Spain	0.66	5.43	93.90	-0.24	-0.25	0.49	4.07	11.01	-15.08
Sweden	2.98	1.08	95.93	-1.35	0.01	1.34	-2.18	-0.28	2.47
Total	3.20	4.07	92.73	-0.67	1.38	-0.71	0.12	2.12	-2.24

Table 3. Valid Answers on *fixed telephone service prices* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	Excessive	Unfair	Fair	Excessive	Unfair	Fair	Excessive	Unfair	Fair
Austria	17.29	33.56	49.15	-10.67	3.20	7.47	-8.04	-29.15	37.19
Belgium	21.16	40.05	38.79	-9.82	-6.30	16.12	-9.66	-26.83	36.50
Denmark	5.63	34.74	59.62	-3.23	-14.07	17.30	-5.63	-23.75	29.39
Finland	1.48	34.98	63.55	-0.37	4.47	-4.10	-0.82	6.08	-5.27
France	18.62	29.29	52.09	-5.00	6.96	-1.96	-10.43	-2.60	13.04
Germany	2.56	32.71	64.72	0.86	-1.58	0.72	6.13	-28.28	22.15
Great Britain	5.45	24.04	70.51	-2.38	-1.84	4.23	-4.31	-14.88	19.19
Greece	13.80	35.52	50.68	-5.81	22.93	-17.12	-2.41	13.59	-11.19
Ireland	12.31	23.08	64.62	-5.06	3.01	2.05	1.29	-7.08	5.78
Italy	26.24	45.25	28.51	-1.26	4.38	-3.11	-6.99	-7.35	14.34
Luxembourg	16.67	11.11	72.22	5.56	5.56	-11.11	-11.11	11.11	0.00
Netherlands	10.34	29.94	59.72	-3.04	0.91	2.13	-2.73	-15.51	18.24
Portugal	11.93	60.24	27.83	-4.15	-6.18	10.33	-5.34	-21.48	26.82
Spain	19.45	49.52	31.02	-11.29	5.11	6.18	-8.55	-20.51	29.06
Sweden	5.98	34.19	59.83	-3.75	-4.86	8.61	-4.60	-15.63	20.23
Total	12.99	35.36	51.65	-3.46	1.89	1.56	-4.16	-15.35	19.51

Table 4. Valid Answers on *fixed telephone service quality* – Years 2000, 2002, 2004 - Percentages

	2000				Diff 2002				Diff 2004			
	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good
Austria	1.03	4.11	43.15	51.71	-0.69	0.22	3.85	-3.38	-1.03	-0.62	4.88	-3.24
Belgium	0.75	2.01	58.65	38.60	-0.50	0.00	-7.77	8.27	0.11	-0.01	-8.08	7.97
Denmark	0.00	2.79	38.60	58.60	0.47	-0.91	3.18	-2.74	0.54	0.45	-2.93	1.94
Finland	0.49	1.47	50.98	47.06	0.06	0.18	8.36	-8.60	0.17	3.79	5.60	-9.56
France	0.55	3.74	56.94	38.77	-0.46	0.55	7.07	-7.16	-0.06	1.54	6.10	-7.57
Germany	1.02	4.57	62.61	31.80	-0.05	1.98	2.61	-4.53	-0.28	-0.08	-5.28	5.64
Great Britain	0.61	3.61	48.28	47.50	0.08	-1.72	1.95	-0.31	0.38	-0.19	3.26	-3.45
Greece	1.82	7.06	62.19	28.93	1.81	3.60	-1.64	-3.76	-1.06	0.51	6.75	-6.20
Ireland	0.00	2.21	37.50	60.29	0.70	-0.09	-0.18	-0.43	0.00	0.94	3.44	-4.39
Italy	2.08	8.50	72.26	17.17	0.24	5.62	-1.36	-4.51	0.09	2.92	0.79	-3.80
Luxembourg	0.00	0.00	44.44	55.56	0.00	5.56	-5.56	0.00	0.00	0.00	2.61	-2.61
Netherlands	0.15	2.77	44.84	52.23	0.64	0.09	11.05	-11.79	0.32	-0.23	-6.14	6.05
Portugal	0.30	7.90	79.03	12.77	0.04	-1.70	6.83	-5.18	0.46	-2.96	5.76	-3.26
Spain	0.82	9.45	73.03	16.69	0.06	0.67	-7.00	6.27	0.32	1.27	-7.34	5.76
Sweden	0.28	1.40	43.14	55.18	0.00	0.53	-5.84	5.32	-0.01	0.77	-8.90	8.13
Total	0.93	5.23	59.89	33.94	0.06	1.36	1.56	-2.98	0.02	0.72	-1.01	0.28

4.2. The electricity service

Similar rates are recorded in 2000, 2002 and 2004 for electricity service (Table 4). Denmark and Luxembourg have the better accessibility satisfaction, having a rate of 100% of easy access to electricity network. On the contrary, Greece, Austria and Germany have the worst situation. Considering all the EU15 countries altogether, a percentage of 95.27% of easy access answers is registered in 2000 but this service lose accessibility during the two following periods. This tendency is more dramatic in Italy than in others EU15 countries: in this country the percentage of easy access decreases (-10.58% in 2002 and -10.86% in 2004) whereas both the percentage of difficult access and the percentage of no access increase (7.89% in 2002 and 8.32% in 2004, 2.69% in 2002 and 2.54% in 2004, respectively). These trends seem to be counter-intuitive and may need further analysis about the understanding of the question and cross-checking with objective evidence.

Like in the case of the fixed telephone service, also in the case of the electricity service price levels are considered worse than the accessibility (Table 5), but ranks in preferences are similar. The overall percentage of fair judgement of service prices is only 58.69%. Among countries, Luxembourg with 83.33% in 2000 has the best rate, whereas Italy (with 20.98% of Excessive and 32.58% of Unfair answers) as well as Portugal (with 11.74% of Excessive and 49.88% of Unfair answers) have the highest rates of unfair and excessive answers about the levels of electricity service prices. In 2002 Ireland registered the highest positive difference in judging unfair the prices (+15.51%), whereas Belgium registered the lowest one (-11.55% of Unfair and -7.48% of Excessive). In 2004 Finland registered the highest positive difference in judging unfair the price levels (+23.96%) and Belgium again registered the lowest one (-25.56).

Finally, quality has been judged fairly or very bad in Italy, Greece and Portugal, very or fairly good in Denmark, Sweden and Ireland (Table 6). Quality standards are generally regarded the same way as price levels: overall, a percentage of 95.34% of the EU15 citizens considers very or fairly good the electricity service quality in 2000. This percentage does not significantly change in 2002 and 2004.

Table 5. Valid Answers on electricity service access – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access
Austria	3.36	4.89	91.74	-2.17	1.10	1.07	-1.11	1.86	-0.75
Belgium	0.24	5.04	94.72	1.35	3.16	-4.52	0.22	4.45	-4.68
Denmark	0.00	0.00	100.00	0.00	0.00	0.00	0.46	3.21	-3.67
Finland	0.48	2.88	96.63	0.00	1.92	-1.92	-0.02	3.13	-3.12
France	0.42	2.36	97.22	0.09	3.92	-4.01	-0.10	4.18	-4.08
Germany	1.99	7.60	90.41	-0.40	1.25	-0.85	1.45	-1.30	-0.15
Great Britain	0.33	0.71	98.96	0.17	2.66	-2.82	-0.08	0.88	-0.80
Greece	0.67	7.64	91.69	-0.45	-0.90	1.35	-0.67	-4.91	5.59
Ireland	0.00	1.33	98.67	0.66	-0.01	-0.65	0.00	-0.02	0.02
Italy	0.00	4.84	95.16	2.69	7.89	-10.58	2.54	8.32	-10.86
Luxembourg	0.00	0.00	100.00	0.00	5.26	-5.26	0.00	5.56	-5.56
Netherlands	0.32	2.52	97.16	-0.15	4.82	-4.67	0.30	6.75	-7.05
Portugal	0.00	3.82	96.18	0.24	4.81	-5.05	0.49	0.59	-1.08
Spain	0.24	4.02	95.74	-0.12	2.12	-1.99	1.04	9.65	-10.69
Sweden	1.36	1.36	97.28	-1.08	1.39	-0.30	-1.36	0.25	1.11
Total	0.71	4.03	95.27	0.34	3.27	-3.61	0.75	3.36	-4.11

Table 6. Valid Answers on *electricity service prices* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	Excessive	Unfair	Fair	Excessive	Unfair	Fair	Excessive	Unfair	Fair
Austria	11.15	28.98	59.87	-4.09	-0.45	4.54	4.96	-21.86	16.91
Belgium	16.95	38.57	44.47	-7.48	-11.55	19.04	-7.51	-25.56	33.08
Denmark	3.21	24.77	72.02	1.01	2.93	-3.94	-2.24	-10.69	12.93
Finland	1.47	34.80	63.73	-0.49	3.24	-2.75	0.59	23.96	-24.55
France	16.85	26.11	57.04	-5.70	7.12	-1.42	-9.74	1.29	8.45
Germany	3.44	35.91	60.65	-0.51	-0.64	1.15	14.35	-24.34	9.98
Great Britain	4.63	17.83	77.54	-3.16	-2.55	5.71	-3.92	-7.79	11.71
Greece	12.13	37.08	50.79	-0.42	12.70	-12.27	2.25	15.89	-18.14
Ireland	7.86	12.86	79.29	0.65	15.51	-16.17	5.81	2.97	-8.78
Italy	20.98	32.58	46.45	0.23	9.66	-9.89	-5.12	2.44	2.68
Luxembourg	11.11	5.56	83.33	0.65	6.21	-6.86	-11.11	14.44	-3.33
Netherlands	5.32	19.63	75.04	-1.18	3.51	-2.33	0.42	-8.83	8.41
Portugal	11.74	49.88	38.39	-5.47	-1.26	6.73	-5.07	-13.21	18.28
Spain	12.75	39.58	47.67	-7.16	3.89	3.27	-4.67	-13.81	18.48
Sweden	5.40	31.25	63.35	-2.52	5.53	-3.01	-1.42	13.64	-12.22
Total	10.76	30.54	58.69	-2.95	3.09	-0.14	-0.99	-8.31	9.30

Table 7. Valid Answers on *electricity service quality* – Years 2000, 2002, 2004 - Percentages

	2000				Diff 2002				Diff 2004			
	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good
Austria	0.00	1.86	29.72	68.42	0.00	2.57	5.38	-7.95	0.37	0.34	13.14	-13.84
Belgium	0.24	1.91	56.70	41.15	-0.24	0.55	-6.92	6.61	0.01	0.10	-6.70	6.59
Denmark	0.00	0.45	30.49	69.06	0.00	0.92	0.10	-1.02	0.00	0.51	-2.13	1.61
Finland	0.00	0.48	50.00	49.52	0.48	1.92	4.81	-7.21	0.51	3.60	6.12	-10.23
France	0.08	2.26	55.89	41.76	0.00	-0.08	6.60	-6.52	0.64	-1.20	3.84	-3.28
Germany	0.90	5.83	59.79	33.48	-0.54	-0.61	0.83	0.32	-0.71	-3.19	-4.43	8.34
Great Britain	0.63	2.40	43.85	53.12	-0.13	-0.69	1.60	-0.78	0.24	-0.10	7.91	-8.05
Greece	0.92	7.57	57.11	34.40	1.09	3.82	1.15	-6.06	-0.23	2.93	10.01	-12.71
Ireland	0.00	1.34	26.85	71.81	0.66	-0.68	3.62	-3.60	0.00	0.04	8.33	-8.36
Italy	0.77	6.89	72.09	20.25	0.28	4.05	1.86	-6.19	-0.40	2.30	4.64	-6.53
Luxembourg	0.00	0.00	38.89	61.11	0.00	0.00	2.29	-2.29	0.00	0.00	8.17	-8.17
Netherlands	0.16	0.95	40.03	58.86	0.17	2.85	14.18	-17.21	0.19	2.85	-2.04	-1.00
Portugal	0.24	7.18	79.43	13.16	0.72	1.94	2.59	-5.24	0.01	-0.85	4.62	-3.79
Spain	0.96	3.78	74.59	20.66	-0.54	5.34	-9.83	5.03	0.42	3.66	-4.69	0.62
Sweden	0.00	2.49	37.40	60.11	0.55	0.55	-5.82	4.71	0.55	1.88	-2.70	0.27
Total	0.57	4.09	57.77	37.57	-0.07	1.36	1.15	-2.44	0.02	0.13	1.18	-1.33

4.3. Gas supply services

The analysis on gas supply service is deeply influenced by the large rate of no accessibility recorded in many countries. Greece, Finland and Sweden have rates higher than or near 50% in 2000. The Netherlands took in 2000 the highest rate of easy accessibility to the gas supply service (96.99%) (Table 7). The Greeks answered that they didn't have any access in 96.71% of the cases in 2000 (but this percentage decreased of 8.71% in 2002 and 19.04% in 2004) and the Swedish in 91.29% of the cases in 2000. Considering all the EU15 countries altogether, a percentage of 81.62% of easy access answers is registered in 2000, whereas in 2002 and 2004 these percentages decrease (-5.36% and -9.44%, respectively).

Table 8 shows the distribution of fair, unfair or excessive answers on gas supply service prices. The overall percentage of fair judgement on service prices is only 60.84% in 2000, but it increases in 2002 (+1.1%) and in 2004 (+8.96%). Among countries, the top one is Greece with 87.5% in 2000, whereas Italy (with 22.80% of Excessive answers) and Portugal (with 50.46% of Unfair answers) have the lowest fair answer rates. In 2002 Greece registered the highest positive difference in judging unfair or excessive the price levels, whereas Belgium registered the lowest one; in 2004 Germany registered the lowest positive difference in judging unfair the prices and the highest positive difference in judging excessive them, whereas Luxembourg obtained diametrically reverse results

Service quality has been judged fairly or very bad in Italy, Portugal and Greece and very or fairly good in countries like Denmark, Sweden and Ireland (Table 9). Quality standards are generally considered almost in the same way as price levels: overall, a percentage of 94.32% of the EU15 citizens considers very or fairly good the gas supply service quality in 2000. This percentage does not significantly change in 2002 and 2004.

Table 8. Valid Answers on *gas supply services access* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access
Austria	12.64	9.39	77.98	15.74	0.99	-16.73	3.78	-1.18	-2.61
Belgium	4.68	7.39	87.93	10.91	1.24	-12.15	12.48	0.94	-13.42
Denmark	39.18	6.19	54.64	12.82	-0.69	-12.14	18.91	0.38	-19.29
Finland	50.34	19.46	30.20	26.88	-8.07	-18.81	18.66	-2.46	-16.20
France	9.77	4.00	86.23	3.64	3.88	-7.52	6.41	4.64	-11.05
Germany	13.24	9.04	77.72	6.92	0.72	-7.64	12.26	-0.32	-11.93
Great Britain	4.26	2.02	93.72	2.87	1.65	-4.52	6.74	4.72	-11.46
Greece	96.71	0.76	2.53	-8.71	4.24	4.47	-19.04	11.15	7.89
Ireland	36.30	5.19	58.52	2.69	-0.95	-1.74	-6.30	0.97	5.33
Italy	4.94	6.05	89.00	1.86	5.94	-7.80	-1.92	5.44	-3.52
Luxembourg	22.22	5.56	72.22	11.11	0.00	-11.11	7.19	0.33	-7.52
Netherlands	0.48	2.54	96.99	0.55	5.01	-5.57	1.10	5.33	-6.42
Portugal	9.18	9.69	81.12	-3.92	1.83	2.09	-1.68	-0.94	2.63
Spain	1.43	7.25	91.32	-0.67	-0.57	1.24	8.84	6.19	-15.03
Sweden	91.29	2.10	6.61	0.00	-0.49	0.49	-1.77	1.58	0.19
Total	12.63	5.75	81.62	3.07	2.30	-5.36	5.82	3.62	-9.44

Table 9. Valid Answers on *gas supply service prices* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	Excessive	Unfair	Fair	Excessive	Unfair	Fair	Excessive	Unfair	Fair
Austria	9.78	24.46	65.76	-1.35	7.47	-6.12	8.24	-14.55	6.31
Belgium	13.99	37.03	48.98	-6.65	-14.09	20.75	-7.19	-24.26	31.45
Denmark	3.61	21.69	74.70	-0.80	-1.97	2.77	-1.44	-10.82	12.26
Finland	5.00	32.50	62.50	0.56	-4.72	4.17	-5.00	-3.93	8.93
France	9.93	19.92	70.14	-1.98	11.73	-9.75	-2.65	5.71	-3.05
Germany	3.66	38.31	58.03	0.60	-3.71	3.12	18.08	-26.15	8.07
Great Britain	3.76	17.32	78.92	-2.47	-3.54	6.01	-3.04	-7.85	10.89
Greece	0.00	12.50	87.50	16.67	20.83	-37.50	0.00	-12.50	12.50
Ireland	4.62	10.77	84.62	-1.11	6.77	-5.67	2.53	5.30	-7.83
Italy	22.80	34.69	42.50	-2.35	4.76	-2.40	-6.79	-2.00	8.79
Luxembourg	8.33	8.33	83.33	1.67	1.67	-3.33	-8.33	13.89	-5.56
Netherlands	5.72	21.55	72.73	-1.58	-0.11	1.69	-0.61	-10.21	10.82
Portugal	8.92	50.46	40.62	-4.35	-8.75	13.10	-2.56	-15.92	18.48
Spain	9.40	35.94	54.67	-5.45	2.26	3.19	-1.98	-9.58	11.56
Sweden	4.76	23.81	71.43	-0.41	-6.42	6.83	-4.76	-3.81	8.57
Total	9.75	29.41	60.84	-2.26	1.15	1.10	-0.05	-8.91	8.96

Table 10. Valid Answers on *gas supply service quality* – Years 2000, 2002, 2004 - Percentages

	2000				Diff 2002				Diff 2004			
	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good
Austria	2.56	2.56	36.92	57.95	-2.00	5.91	2.06	-5.97	-1.66	1.04	1.82	-1.19
Belgium	0.85	2.56	55.27	41.31	-0.85	-0.19	-6.61	7.65	-0.43	-1.30	-5.27	7.01
Denmark	0.00	0.00	31.33	68.67	0.00	1.37	2.92	-4.29	0.00	0.00	1.28	-1.28
Finland	2.38	2.38	69.05	26.19	3.50	3.50	-4.34	-2.66	-2.38	-2.38	-11.90	16.67
France	0.00	2.31	56.41	41.27	0.11	1.05	3.31	-4.48	0.62	-1.16	2.54	-2.00
Germany	1.13	7.93	59.21	31.73	-0.54	-0.18	2.28	-1.55	-1.13	-5.87	1.38	5.62
Great Britain	1.05	2.75	42.90	53.30	-0.27	-1.28	2.98	-1.42	-0.35	-0.97	8.85	-7.52
Greece	7.69	0.00	38.46	53.85	19.58	9.09	16.08	-44.76	-7.69	0.00	-13.46	21.15
Ireland	0.00	2.82	26.76	70.42	3.17	-1.23	4.99	-6.93	0.00	-1.09	11.17	-10.08
Italy	1.14	6.38	71.14	21.34	0.09	2.74	2.27	-5.09	-0.92	1.34	8.51	-8.93
Luxembourg	0.00	0.00	46.15	53.85	0.00	0.00	-6.15	6.15	0.00	0.00	3.85	-3.85
Netherlands	0.16	0.65	39.35	59.84	0.01	1.58	14.25	-15.83	0.02	2.43	-2.69	0.24
Portugal	0.30	9.97	76.44	13.29	1.37	-1.61	5.74	-5.49	0.00	-3.26	9.54	-6.28
Spain	1.81	4.92	75.00	18.26	-0.82	0.60	-6.05	6.27	-0.73	1.92	-0.44	-0.75
Sweden	0.00	4.76	38.10	57.14	4.55	-0.22	-1.73	-2.60	0.00	-4.76	-13.10	17.86
Total	0.96	4.72	58.66	35.66	-0.19	0.65	1.98	-2.44	-0.48	-0.75	4.23	-3.00

4.4. Water supply services

As in the case of the electricity service, Denmark and Luxembourg have the better accessibility, having a rate of 100% of easy access to the water supply service (Table 10). In 2002 in Italy there was an increase of 2.7% of no access (whereas in 2000 nobody declared to have no access to water network) and the percentage of people declaring to have difficult access increases of 5.37% (whereas the percentage of easy accesses decreases of 8.09%). A similar situation stands in Spain in 2004: the percentage of difficult access increases (+6.99%) whereas the percentage of easy access decreases (-8.93%). Considering the EU15 countries altogether, a percentage of 94.53% of easy access answers is registered in 2000, but this percentage decreases in the following years.

Table 11 shows the distribution of the answers on water supply service prices. The overall percentages of fair judgement on service prices are only 58.05% in 2000, but it increases in 2002 (+2.19%) and in 2004 (+15.25%). Among countries, Luxembourg (with 88.24% in 2000) has a good rate of satisfaction, whereas Italy (with 48.4% in 2000) has a bad one. Greece registered the highest positive difference in judging unfair or excessive the prices both in 2002 and in 2004 and Belgium registered the lowest one both in 2002 and in 2004.

Quality has been judged fairly or very bad in Italy, Greece and Portugal (as for the case of electricity service, with Italy in the place of Spain) and very or fairly good in countries like Denmark, the Netherlands and Luxembourg (Table 12). Quality standards are generally considered almost in the same way as price levels: overall, a percentage of 92.8% of the EU15 citizens considers very or fairly good the water supply service quality in 2000. This percentage still remains similar in the following years.

Table 11. Valid Answers on *water supply services access* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access	No Access	Difficult Access	Easy Access
Austria	4.05	4.67	91.28	-2.21	1.75	0.47	-2.73	2.89	-0.16
Belgium	0.48	5.76	93.76	0.88	2.65	-3.54	0.22	-0.19	-0.03
Denmark	0.00	0.00	100.00	0.00	0.45	-0.45	1.38	2.29	-3.67
Finland	4.41	3.43	92.16	-1.44	0.03	1.41	-2.10	2.12	-0.03
France	0.42	2.92	96.66	1.07	3.84	-4.91	0.41	2.04	-2.45
Germany	2.70	7.58	89.73	-0.49	2.18	-1.69	1.98	-2.12	0.15
Great Britain	0.37	1.00	98.63	0.55	2.14	-2.69	-0.04	0.47	-0.43
Greece	0.67	8.31	91.01	0.68	-1.99	1.31	-0.67	-5.81	6.49
Ireland	2.68	1.34	95.97	-1.32	0.70	0.63	-0.68	-0.01	0.69
Italy	0.00	5.80	94.20	2.73	5.37	-8.09	3.11	5.07	-8.18
Luxembourg	0.00	0.00	100.00	0.00	5.26	-5.26	0.00	5.56	-5.56
Netherlands	0.00	3.14	96.86	0.51	2.76	-3.27	0.64	3.87	-4.50
Portugal	2.17	6.04	91.79	0.23	3.82	-4.05	1.51	-1.12	-0.39
Spain	0.30	3.90	95.80	0.12	0.04	-0.16	1.94	6.99	-8.93
Sweden	4.13	0.55	95.32	-2.76	1.09	1.67	-3.86	1.05	2.81
Total	1.08	4.39	94.53	0.53	2.59	-3.12	1.07	1.67	-2.74

Table 12. Valid Answers on *water supply service prices* – Years 2000, 2002, 2004 - Percentages

	2000			Diff 2002			Diff 2004		
	Excessive	Unfair	Fair	Excessive	Unfair	Fair	Excessive	Unfair	Fair
Austria	8.70	18.06	73.24	-2.53	4.02	-1.49	-2.40	-11.37	13.76
Belgium	15.06	33.83	51.11	-5.18	-7.71	12.89	-7.90	-23.60	31.50
Denmark	5.12	25.58	69.30	0.17	-1.54	1.37	-5.12	-14.92	20.04
Finland	0.53	25.13	74.33	1.07	-0.53	-0.53	0.03	10.26	-10.29
France	23.90	27.48	48.62	-5.16	6.41	-1.25	-14.79	0.71	14.08
Germany	6.09	40.51	53.40	-0.43	-3.08	3.51	10.09	-29.71	19.62
Great Britain	7.00	25.66	67.34	-3.60	-2.80	6.40	-6.01	-14.24	20.25
Greece	4.51	17.61	77.88	-1.10	17.47	-16.37	1.43	14.43	-15.86
Ireland	2.56	11.97	85.47	-0.71	-3.63	4.34	1.67	-5.19	3.51
Italy	19.03	32.60	48.37	-0.27	1.50	-1.23	-5.19	-5.26	10.45
Luxembourg	5.88	5.88	88.24	5.88	0.00	-5.88	-5.88	12.87	-6.99
Netherlands	6.14	15.75	78.11	-4.20	-0.06	4.25	-2.92	-9.14	12.05
Portugal	7.31	39.95	52.74	-3.30	-0.11	3.41	-2.63	-10.75	13.37
Spain	10.34	30.34	59.32	-7.24	3.22	4.01	-3.83	-8.17	12.00
Sweden	3.20	19.22	77.58	-2.20	-10.19	12.39	-2.90	-12.51	15.41
Total	11.76	30.19	58.05	-2.95	0.76	2.19	-3.37	-11.88	15.25

Table 13. Valid Answers on *water supply service quality* – Years 2000, 2002, 2004 - Percentages

	2000				Diff 2002				Diff 2004			
	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good	Very Bad	Fairly Bad	Fairly Good	Very good
Austria	0.64	2.24	26.20	70.93	-0.33	0.52	8.36	-8.54	-0.64	-0.69	10.87	-9.54
Belgium	0.48	3.37	56.14	40.00	-0.03	-0.67	-6.60	7.30	0.02	-0.85	-7.91	8.74
Denmark	0.00	0.45	30.18	69.37	0.00	2.29	-0.50	-1.79	0.00	1.02	-3.71	2.69
Finland	1.04	1.55	51.30	46.11	-0.52	0.51	-3.87	3.89	-1.04	1.18	-0.48	0.33
France	1.10	5.87	58.09	34.94	0.00	0.71	3.71	-4.41	0.19	-1.35	1.49	-0.33
Germany	1.32	7.14	57.75	33.78	-0.90	-1.04	3.71	-1.77	-1.24	-5.13	-0.78	7.16
Great Britain	1.02	3.01	45.10	50.87	-0.09	0.19	1.21	-1.31	0.07	0.16	5.98	-6.21
Greece	1.36	8.64	53.86	36.14	1.14	0.00	5.00	-6.14	0.01	-0.15	11.73	-11.60
Ireland	1.42	3.55	31.21	63.83	-0.04	-0.79	3.97	-3.14	0.11	0.27	0.86	-1.23
Italy	3.13	10.55	67.39	18.92	-0.58	0.66	4.10	-4.18	-2.14	-0.40	7.47	-4.92
Luxembourg	0.00	0.00	38.89	61.11	0.00	5.56	0.00	-5.56	0.00	0.00	8.17	-8.17
Netherlands	0.16	0.79	39.05	60.00	0.01	1.04	13.87	-14.92	0.02	0.45	-2.23	1.77
Portugal	0.51	7.93	77.49	14.07	1.27	3.27	2.15	-6.69	-0.24	-2.48	6.98	-4.26
Spain	1.08	4.93	73.84	20.14	-0.24	1.56	-7.56	6.24	0.19	1.81	-1.39	-0.62
Sweden	0.30	1.19	34.63	63.88	0.57	0.25	-14.11	13.29	-0.30	0.19	-10.74	10.84
Total	1.35	5.85	56.79	36.01	-0.27	0.34	1.70	-1.77	-0.58	-1.29	1.67	0.20

5. A conditional analysis of consumers' satisfaction

Although informative, the results presented in previous section do not allow to see whether there is any pattern in satisfaction across groups of consumers and across countries. In this section we try to shed some light on this issues. We analyse consumers' satisfaction with fixed telephone, gas, water and electricity supply across the dimensions of access, prices and quality, depending on a set of information about each respondent and the country she lives in.

As satisfaction to different SGI are coded with ordinal variables, we use an ordered logit model for each of them, across the dimension of access, price and quality. By using this model we assume that the true level of satisfaction for each service and each dimension, S^*, is unknown and is determined by

$$S^* = \mathbf{x}\boldsymbol{\beta} + e, \quad e \,|\, \mathbf{x} \;\square\; \Lambda(0, \pi/\sqrt{3}) \qquad (1)$$

where $\boldsymbol{\beta}$ is $K \times 1$, $\mathbf{x}$ does not contain a constant, and $\Lambda(0, \pi/\sqrt{3})$ stands for standard logistic distribution. Hence, we define our stated level of satisfaction S as:

$$\begin{aligned} S = 0 \quad &\text{if} \quad S^* \le \alpha_1 \\ S = 1 \quad &\text{if} \quad \alpha_1 < S^* \le \alpha_2 \\ &\vdots \\ S = J \quad &\text{if} \quad S^* > \alpha_J \end{aligned}$$

where $\alpha_1 < \alpha_2 < ... < \alpha_J$ are unknown cut points. As satisfaction on SGI access takes three values (no access, difficult and easy access), on SGI prices takes three values (excessive, fair, unfair) and on SGI quality takes four values (very bad, fairly bad, fairly good, very good), $J = 2$ for access and price satisfaction and $J = 3$ for quality satisfaction.

As controls, $\mathbf{x}$, we used a set of individual characteristics (including sex, age, marital status, age when finished education, occupation, political views, contribution to Household inc. and Household inc., resp.nt's cooperation as assessed by interviewer), of country fixed-effects, year dummies, some country-level macroeconomic variables (GDP per capita, Gini index, population density, public procurement values, social benefits, subsidies to producers, total government expend.s and revenues) and some regulatory indicators of entry regulation, public ownership, market structure and vertical integration.

All information about individual characteristics are provided by Eurobarometer databases EB53 (for year 2000), EB58 (for year 2002) and EB61.2 (for year 2004). Although the structure of the questionnaire is remained substantially unchanged across these three years, in the 2004 issue there is no information about economic variables (respondent's contribution to Household inc. and Household inc.): when these important variables are included in the model, the whole EB62.1 is left out of the analysis and comparisons of remaining coefficients across models are exploited for assessing robustness of results. Macroeconomic variables are obtained by Eurostat. Regulatory variables are obtained by REGREF, an OECD regulatory database (Conway and Nicoletti, 2006). We used some of the variables contained in this database. In particular, we used the variable "entry regulation", which is a weighted average of legal conditions of entry in a market and is coded from 0 (free entry) to 6 (franchised to one firm), available for telephone, gas and electricity; the variable "vertical integration", which is an indicator of vertical separation in different industries and is coded from 0 (ownership separation) to 6 (integration), available for electricity and gas; the variable "market structure", which is an indicator of the market share of the incumbent and is coded from 0 (less than 50%) to 6 (more than 90%), available for telephone and gas; the variable "public ownership", which measures the public ownership of each SGI and is coded from 0 (private ownership) to 6 (public ownership), available for telephone, gas and electricity. Unfortunately, none of these regulatory variables are available for water supply. In the present analysis we considered these variables lagged one period for each year (i.e. for years 1999, 2001 and 2003), as interviews were run before years 2000, 2002 and 2004 were completely over.

All models were estimated by maximum likelihood using pooled datasets and a year-fixed effect dummy was introduced to capture any trend.

Tables 14-17 present results, where coefficients reported are the coefficients of model (1): although they cannot be interpreted as marginal effects and their magnitude has no economic meaning, a positive sign shows that the J outcome is more likely and a negative sign shows that the outcome 0 is more likely.

Looking at personal characteristics, we can notice that on average female with respect to males are significantly less satisfied with prices for all SGI considered, more satisfied with telephone access, while there is no significant particular difference of opinion as far as quality is concerned. The older the respondent, the smaller is the satisfaction with prices and the larger that with access. Regardless of the SGI considered, more educated people are more satisfied with access and prices than people who exited the education system at younger age, although there is no significant difference concerning quality satisfaction. Looking at occupation variables, holding self-employment as the reference category, managers are more likely to be very satisfied than others with telephone, managers and other white collars are more likely to be very satisfied with price and quality of gas supply and managers, other white collars and manual workers are more satisfied with prices of electricity. Unemployed people are consistently across SGI more dissatisfied and students more satisfied than self-

employed, especially with respect to price. As the Eurobarometer data sets also contain a question asking whether respondents have political views closer to the right or to the left, we also introduced this variable as control, finding that those who complain the most about considered SGI are people whose political views is closer to the left. With respect to those giving excellent collaboration to the interviewer, the lower the collaboration the more likely tend to be the individual satisfaction of different services, regarding quality, access and prices. Finally, looking at Household inc., results show that the level of satisfaction is higher the larger is total purchasing power.

Let us now look at country fixed-effects. Due to the short length of the time series, collinearity between country dummies and macroeconomic indicators forces us to analyse them separately. Country coefficients show that there is large variability of consumers' satisfaction looking at different countries across SGI. Holding Belgium as the reference country, we can verify some of the results of previous section. For instance, residents of Scandinavian countries result more satisfied than Belgians with respect to price for all SGI, although there are very dissatisfied with access to gas supply. South-Europeans are more dissatisfied with prices, even controlling for Household inc.. The UK is on the opposite side, constantly more satisfied than the reference country with respect to all SGI, evaluated across the dimensions of access, quality and price.

Looking at macroeconomic indicators, results show that the more unequal a country, the more likely is the dissatisfaction of their citizens with respect to price, with the only exception of telephone services, that larger public procurement values tend to increase satisfaction, while subsidies to (all) producers have no clear effect.

Regulatory variables show some interesting results. As for telephone services, the larger the market share of the incumbents, the lower satisfaction of access, price and quality; the closer to free entry the telephone market is, the more consumers are satisfied with access, although satisfaction with prices is instead reduced. Interestingly, in countries where public ownership is large, consumers are more satisfied with telephone services for all dimensions considered.

As for gas supply, in countries with free entry into the market consumers are less likely to be satisfied with access, although there is no significant difference with respect to price and quality. The larger the share of the incumbent, the larger is satisfaction with respect to access and the lower that with respect to price and quality. Vertical integration results to have a negative impact on access satisfaction, a positive one on price and quality satisfaction. Analogously to telephone services, the larger the share of public ownership in the industry, the more consumers are likely to be satisfied.

Finally, with respect to electricity, the probability of satisfaction increases with respect to all dimensions considered if the electricity industry is more vertically integrated, however it reduces if there is less free entry and if the share of public ownership is large.

Although the time series considered is very short and any hint of a trend should be taken with caution, consumer satisfaction seems to improve in the very last survey considered, especially as far as prices are concerned, for all SGI considered.

Table 14: Ordered logit analysis of consumer satisfactions about fixed telephone

	Telephone: Access	Telephone: Access	Telephone: Access	Telephone: Price	Telephone: Price	Telephone: Price	Telephone: Quality	Telephone: Quality	Telephone: Quality
female	0.146***	0.144***	0.024	-0.075***	-0.072***	-0.060**	0.000	0.000	0.018
age	0.016**	0.015**	0.033***	-0.033***	-0.035***	-0.036***	-0.005	-0.007*	-0.011**
age squared	0.000	0.000	-0.000***	0.000***	0.000***	0.000***	0.000**	0.000***	0.000***
single	-0.283***	-0.283***	-0.124*	0.021	-0.003	0.055	-0.081**	-0.095***	-0.084**
separated/divorced/widowed	-0.494***	-0.493***	-0.294***	-0.177***	-0.160***	-0.087**	-0.102***	-0.094***	-0.047
age when finished education	0.038***	0.036***	0.144***	0.036***	0.035***	0.061***	-0.010**	-0.012**	-0.004
(age at end educ.) squared	-0.000***	-0.000***	-0.003***	-0.000***	-0.000***	-0.001***	0.000	0.000	0.000
Manager	0,024	0.059	-0.066	-0.088*	-0.037	-0.131**	0.063	0.096**	0.134**
other white collar	-0,107	-0.088	-0.252**	-0.051	-0.023	-0.098*	0.037	0.055	0.006
manual worker	-0,117	-0.088	-0.180*	-0.072*	0.003	-0.079	-0.041	0.002	-0.026
house person	-0.396***	-0.369***	-0.299***	-0.039	-0.013	-0.070	0.067	0.083*	0.119**
Unemployed	-0.469***	-0.460***	-0.385***	-0.320***	-0.258***	-0.226***	-0.128**	-0.098*	-0.094
Retired	-0,142	-0.134	-0.096	-0.107**	-0.069	-0.075	-0.011	0.005	0.014
Student	0.674***	0.661***	1.509***	0.569***	0.577***	0.724***	-0.050	-0.057	-0.046
political views: center	0,048	0.041	-0.004	0.081***	0.083***	0.043	0.063**	0.065***	0.058**
political views: right	0.299***	0.296***	0.234***	0.001	0.000	-0.013	0.134***	0.138***	0.108***
political views: missing	-0,029	-0.060		-0.262***	-0.341***		-0.074	-0.131**	
resp.nt's cooperation: fair	-0.157***	-0.189***	-0.117**	-0.010	-0.045*	0.038	-0.212***	-0.234***	-0.215***
resp.nt's cooperation: average	-0.367***	-0.392***	-0.163**	-0.148***	-0.155***	-0.132***	-0.166***	-0.168***	-0.144***
resp.nt's cooperation: bad	-1.012***	-1.040***	-0.902***	-0.066	-0.089	0.122	-0.354***	-0.360***	-0.347***
resp. contrib. to hh inc.: least			0.277***			0.040			-0.019
resp. contrib. to hh inc.: equal			0.174			-0.052			-0.074
Household inc.: II quartile			0.387***			0.215***			0.115***
Household inc.: III quartile			0.586***			0.112***			0.084**
Household inc.: IV quartile			0.586***			0.364***			0.252***
Denmark	0.829***		1.822***	0.952***		1.019***	0.566***		0.572***
Germany	0.255**		0.445***	0.878***		0.948***	-0.505***		-0.581***
Greece	0.626***		0.503***	-0.377***		-0.020	-0.917***		-0.875***
Italy	-0,048		-0.004	-0.923***		-0.789***	-1.468***		-1.423***
Spain	0,084		0.832***	-0.335***		-0.286***	-1.116***		-1.123***
France	0.529***		0.777***	0.027		0.187**	-0.414***		-0.323***
Ireland	0.466**		0.395	0.528***		0.835***	0.553***		0.658***
Luxembourg	0,982		1.224	0.590*		0.757**	0.380		0.476
Netherlands	0.889***		1.114***	0.509***		0.655***	0.214***		0.104
Portugal	-0,128		-0.240	-0.289***		-0.181*	-1.372***		-1.374***
Great Britain	0.822***		0.826***	1.204***		1.250***	0.062		0.118
Finland	-0,256		0.161	0.426***		0.779***	-0.113		-0.028
Sweden	1.241***		1.316***	0.699***		0.856***	0.609***		0.570***
Austria	0,129		0.133	0.404***		0.350***	0.221**		0.229**
GDP, per capita		-0.009***			-0.005**			0.011***	
GINI		-0.077***			0.032***			-0.036***	
PopDens		0.001***			0.002***			0.002***	
public procurement values, % GDP		0.284***			-0.060***			0.241***	
social benefit, % GDP		-0.055***			-0.101***			-0.074***	
subsidies to producers, % GDP		-0.034			0.013			0.082**	
total government expend., % GDP		0.085***			-0.159***			-0.072***	
total government revenues, % GDP		-0.104***			0.085***			0.048***	
Entry Regulation: Tel		-0.143***			0.096***			0.050*	

Market Structure: Tel		-0.126***			-0.612***			-0.185***	
Public Ownership: Tel		0.099***			0.511***			0.313***	
year 2002	-0.101**	-0.191***	-0.109**	0.109***	-0.163***	0.116***	-0.162***	-0.181***	-0.159***
year 2004	-0.335***	-0.433***		0.888***	0.612***		-0.053*	-0.027	
Observations	45249	45195	30519	41184	41134	28912	41530	41478	29212

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 15: Ordered logit analysis of consumer satisfactions about gas supply

	Gas: Access	Gas: Access	Gas: Access	Gas: Price	Gas: Price	Gas: Price	Gas: Quality	Gas: Quality	Gas: Quality
Female	0.026	0.025	0.152***	-0.087***	-0.085***	-0.096***	-0.007	-0.008	0.017
Age	0.018***	0.015***	0.026***	-0.022***	-0.023***	-0.019***	0.002	0.001	0.000
age squared	-0.000***	-0.000***	-0.000***	0.000***	0.000***	0.000***	0.000	0.000	0.000
single	-0.116***	-0.094**	-0.070	0.032	0.020	0.051	-0.108***	-0.119***	-0.137***
separated/divorced/widowed	0.018	0.036	0.039	-0.013	-0.010	0.062	-0.057	-0.049	-0.019
age when finished education	0.032***	0.033***	0.038	0.039***	0.035***	0.070***	0.013**	0.012**	0.044**
(age at end educ.) squared	-0.000***	-0.000***	-0.001	-0.000***	-0.000***	-0.001***	-0.000***	-0.000***	-0.001**
manager	0.112*	0.153**	0.056	0.223***	0.275***	0.206***	0.114**	0.149***	0.152**
other white collar	0.040	0.103*	0.025	0.142***	0.168***	0.176***	0.004	0.024	-0.014
manual worker	-0.032	0.057	-0.042	0.028	0.079	0.105*	-0.022	0.018	-0.014
house person	-0.049	0.035	0.104	0.239***	0.262***	0.261***	0.114**	0.136**	0.169**
unemployed	-0.256***	-0.180***	-0.101	-0.167**	-0.120*	-0.124	-0.092	-0.052	-0.093
retired	-0.010	0.052	0.046	0.132**	0.143**	0.193***	0.130**	0.149***	0.168**
student	0.577***	0.630***	0.664***	0.778***	0.748***	1.091***	0.279**	0.286***	0.562**
political views: center	-0.073**	-0.121***	-0.063	0.017	0.017	-0.008	0.023	0.027	0.046
political views: right	-0.078**	-0.153***	-0.119**	-0.014	-0.013	-0.061	0.086**	0.085**	0.073*
political views: missing	0.120**	0.143***		-0.083	-0.142**		0.055	0.024	
resp.nt's cooperation: fair	0.154***	0.107***	0.223***	-0.011	-0.031	-0.009	-0.205***	-0.214***	-0.198***
resp.nt's cooperation: average	0.035	-0.083*	0.210***	-0.179***	-0.196***	-0.184***	-0.185***	-0.182***	-0.185***
resp.nt's cooperation: bad	-0.084	-0.310***	0.032	-0.133	-0.154*	0.026	-0.384***	-0.384***	-0.413***
resp. contrib. to hh inc.: least			-0.200***			0.059			-0.027
resp. contrib. to hh inc.: equal			-0.044			0.068			0.101
Household inc.: II quartile			0.223***			0.142***			0.055
Household inc.: III quartile			0.272***			0.013			-0.034
Household inc.: IV quartile			0.265***			0.159***			0.201***
Denmark	-1.896***		-1.807***	0.701***		0.782***	0.845***		0.842***
Germany	-0.510***		-0.503***	-0.055		0.160*	-0.625***		-0.701***
Greece	-4.017***		-4.854***	0.535		0.470	-0.955**		-1.310***
Italy	0.416***		0.271***	-0.864***		-0.756***	-1.317***		-1.169***
Spain	0.578***		1.009***	-0.099		0.026	-1.101***		-0.996***
France	-0.006		0.037	0.080		0.273***	-0.262***		-0.259***
Ireland	-1.116***		-1.416***	0.828***		1.198***	0.805***		0.907***
Luxembourg	-0.856***		-0.901**	0.939*		1.265**	0.268		0.309
Netherlands	1.247***		1.362***	0.571***		0.655***	0.321***		0.237**
Portugal	0.308***		0.112	-0.293***		-0.167	-1.591***		-1.492***
Great Britain	0.728***		0.898***	1.151***		1.221***	0.174**		0.251***
Finland	-2.769***		-2.816***	0.102		0.250	-0.957***		-1.011***
Sweden	-4.374***		-4.536***	0.601*		0.808**	0.557*		0.369
Austria	-0.510***		-0.731***	0.051		0.208	0.322***		0.270**
GDP, per capita		0.059***			-0.018***			0.001	
GINI		0.469***			-0.123***			-0.131***	
PopDens		0.005***			0.005***			0.004***	

public procurement values, % GDP		-0.087**			1.032***			0.804***	
social benefit, % GDP		0.353***			-0.025*			-0.036**	
subsidies to producers, % GDP		1.272***			0.270***			0.267***	
total government expend., % GDP		-0.468***			-0.020			-0.007	
total government revenues, % GDP		0.367***			-0.026			-0.011	
Entry Regulation: Gas		0.222***			-0.002			-0.003	
Market Structure: Gas		0.210***			-0.431***			-0.317***	
Vertical Intergration: Gas		-0.590***			0.199***			0.162***	
Public Ownership: Gas		0.131***			0.186***			0.172***	
year 2002	-0.442***	-0.515***	-0.464***	0.068**	0.174***	0.064**	-0.115***	-0.036	-0.128***
year 2004	-0.668***	-0.585***		0.366***	0.399***		-0.125***	-0.125***	
Observations	42350	42350	28316	30809	30809	22491	31523	31523	23155

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 16: Ordered logit analysis of consumer satisfactions about water supply

	Water: Access	Water: Access	Water: Access	Water: Price	Water: Price	Water: Price	Water: Quality	Water: Quality	Water: Quality
Female	0.046	0.043	0.116**	-0.105***	-0.105***	-0.093***	-0.007	-0.009	0.032
Age	0.025***	0.022***	0.020**	-0.031***	-0.033***	-0.032***	-0.008**	-0.011***	-0.010**
age squared	-0.000***	-0.000**	0.000	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
single	-0.031	-0.049	-0.048	0.015	-0.011	0.004	-0.024	-0.060**	-0.048
separated/divorced/widowed	-0.127**	-0.109**	-0.148**	0.008	0.019	0.036	-0.025	0.002	0.007
age when finished education	0.029***	0.027***	0.053*	0.042***	0.040***	0.035**	0.007	0.008*	-0.006
(age at end educ.) squared	-0.000***	-0.000***	-0.001	-0.000***	-0.000***	0.000	0.000	-0.000*	0.000
manager	0.044	0.129	0.142	0.232***	0.289***	0.240***	0.072	0.166***	0.099*
other white collar	-0.014	0.019	0.003	0.063	0.062	0.094*	-0.011	0.003	-0.008
manual worker	0.209***	0.293***	0.203**	0.023	0.069*	0.106**	-0.010	0.083**	-0.003
house person	0.118	0.165*	0.187*	0.134***	0.136***	0.192***	0.102**	0.128***	0.149***
unemployed	0.227**	0.297***	0.272**	-0.215***	-0.174***	-0.186***	-0.099*	-0.018	-0.119*
retired	0.123	0.160*	0.161	0.007	0.009	0.106*	0.094**	0.135***	0.081
student	0.290*	0.302*	0.528	0.826***	0.807***	0.814***	0.221**	0.254***	0.071
political views: center	0.088**	0.099**	0.019	0.075***	0.102***	0.060**	0.065***	0.107***	0.080***
political views: right	0.073	0.079	-0.003	-0.016	0.023	-0.024	0.100***	0.142***	0.089**
political views: missing	-0.154*	-0.230***		-0.436***	-0.520***		-0.153***	-0.276***	
resp.nt's cooperation: fair	-0.037	-0.091**	0.027	0.042*	0.008	0.054**	-0.174***	-0.226***	-0.172***
resp.nt's cooperation: average	-0.180***	-0.216***	-0.012	-0.095***	-0.087**	-0.078*	-0.167***	-0.161***	-0.160***
resp.nt's cooperation: bad	-0.515***	-0.579***	-0.390***	0.108	0.095	0.242**	-0.388***	-0.416***	-0.341***
resp. contrib. to hh inc.: least			-0.041			0.042			-0.024
resp. contrib. to hh inc.: equal			-0.192			0.047			-0.017
Household inc.: II quartile			0.292***			0.033			0.100**
Household inc.: III quartile			0.258***			-0.085**			-0.024
Household inc.: IV quartile			0.191**			0.078			0.173***
Denmark	1.705***		3.627***	0.493***		0.525***	0.980***		0.976***
Germany	-0.467***		-0.386***	-0.132**		0.027	-0.408***		-0.504***
Greece	0.173		-0.024	0.185**		0.621***	-0.737***		-0.592***
Italy	-0.434***		-0.217	-0.599***		-0.429***	-1.387***		-1.313***
Spain	0.036		0.676***	0.079		0.260***	-0.940***		-0.835***
France	0.230*		0.358**	-0.599***		-0.505***	-0.540***		-0.529***
Ireland	0.930***		0.949***	1.428***		1.741***	0.647***		0.689***
Luxembourg	0.792		1.104	1.067***		1.479***	0.386		0.469
Netherlands	0.231		0.576***	0.981***		1.103***	0.412***		0.329***
Portugal	-0.204		-0.195	-0.076		0.066	-1.400***		-1.410***

Great Britain	1.210***		1.169***	0.590***		0.640***	0.102*		0.198***
Finland	-0.107		0.050	0.317***		0.802***	0.073		0.114
Sweden	0.833***		0.783***	1.273***		1.389***	1.078***		1.041***
Austria	-0.137		-0.079	0.617***		0.680***	0.821***		0.887***
GDP, per capita		0.005*			-0.007***			0.014***	
GINI		-0.041***			-0.116***			-0.137***	
PopDens		0.001***			0.003***			0.002***	
public procurement values, % GDP		0.482***			0.392***			0.447***	
social benefit, % GDP		-0.020			-0.060***			-0.047***	
subsidies to producers, % GDP		0.108			0.226***			0.324***	
total government expend., % GDP		0.017			-0.021**			0.047***	
total government revenues, % GDP		-0.024			-0.038***			-0.073***	
year 2002	-0.501***	-0.495***	-0.489***	0.112***	0.115***	0.110***	-0.084***	-0.072***	-0.083***
year 2004	-0.428***	-0.414***		0.726***	0.737***		0.026	0.060**	
Observations	44351	44351	29840	41457	41457	28647	42711	42711	29752

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 17: Ordered logit analysis of consumer satisfactions about electricity supply

	Electr.: Access	Electr.: Access	Electr.: Access	Electr.: Price	Electr.: Price	Electr.: Price	Electr.: Quality	Electr.: Quality	Electr.: Quality
female	0.022	0.016	0.014	-0.068***	-0.068***	-0.068**	0.006	0.004	0.043
age	0.047***	0.044***	0.030***	-0.021***	-0.024***	-0.021***	-0.005	-0.007**	-0.008*
age squared	-0.000***	-0.000***	-0.000**	0.000***	0.000***	0.000***	0.000**	0.000***	0.000**
single	-0.052	-0.087	-0.044	0.023	-0.010	0.034	-0.071**	-0.100***	-0.094**
separated/divorced/widowed	-0.207***	-0.194***	-0.194**	-0.046	-0.025	0.007	-0.047	-0.028	-0.033
age when finished education	0.023***	0.020***	0.065**	0.036***	0.032***	0.086***	0.008	0.004	0.009
(age at end educ.) squared	-0.000***	-0.000***	-0.002**	-0.000***	-0.000***	-0.002***	-0.000*	0.000	0.000
manager	-0.072	0.020	-0.100	0.233***	0.320***	0.220***	0.062	0.138***	0.172***
other white collar	-0.067	-0.042	-0.045	0.093**	0.107**	0.091*	-0.061	-0.048	-0.031
manual worker	0.074	0.161**	-0.108	0.063	0.148***	0.120**	-0.027	0.047	-0.002
house person	-0.002	0.040	0.027	0.178***	0.208***	0.229***	0.023	0.049	0.102*
unemployed	0.250**	0.325***	0.263*	-0.125**	-0.049	-0.063	-0.047	0.015	-0.044
retired	0.096	0.132	-0.005	0.120**	0.146***	0.218***	0.046	0.074	0.098*
student	0.279*	0.284*	0.319	0.795***	0.775***	1.258***	0.183**	0.161*	0.154
political views: center	0.056	0.096**	-0.092	0.044*	0.076***	0.011	0.051**	0.086***	0.057**
political views: right	0.110*	0.144**	-0.023	-0.012	0.016	-0.067*	0.112***	0.144***	0.099***
political views: missing	-0.077	-0.189**		-0.109**	-0.253***		-0.121**	-0.236***	
resp.nt's cooperation: fair	-0.101**	-0.157***	-0.131**	-0.018	-0.079***	0.003	-0.203***	-0.251***	-0.185***
resp.nt's cooperation: average	-0.373***	-0.391***	-0.251***	-0.233***	-0.256***	-0.217***	-0.165***	-0.160***	-0.129***
resp.nt's cooperation: bad	-0.457***	-0.495***	-0.245	-0.100	-0.138*	0.028	-0.373***	-0.374***	-0.319***
resp. contrib. to hh inc.: least			0.026			0.021			-0.071**
resp. contrib. to hh inc.: equal			0.028			0.049			0.031
Household inc.: II quartile			0.431***			0.148***			0.076*
Household inc.: III quartile			0.437***			0.032			-0.006
Household inc.: IV quartile			0.350***			0.189***			0.157***
Denmark	1.846***		4.087***	0.640***		0.740***	0.964***		0.953***
Germany	-0.203*		-0.225	0.201***		0.448***	-0.402***		-0.518***
Greece	0.393**		0.031	-0.658***		-0.221**	-0.904***		-0.738***
Italy	-0.358***		-0.284**	-0.696***		-0.501***	-1.361***		-1.291***
Spain	0.034		0.442***	-0.126*		-0.021	-1.012***		-0.947***
France	0.426***		0.541***	-0.090		0.068	-0.267***		-0.256***
Ireland	1.892***		1.674***	0.449***		0.807***	0.953***		1.084***

Luxembourg	0.972		1.287	0.873**		1.238***	0.441		0.532
Netherlands	0.196		0.438**	0.763***		0.925***	0.256***		0.183**
Portugal	0.548***		0.349*	-0.288***		-0.139	-1.496***		-1.503***
Great Britain	1.450***		1.251***	1.231***		1.334***	0.168***		0.268***
Finland	0.513**		0.648**	-0.103		0.480***	-0.102		-0.005
Sweden	1.280***		1.169***	-0.053		0.409***	0.562***		0.611***
Austria	0.105		-0.009	0.267***		0.396***	0.658***		0.740***
GDP, per capita		0.000			0.018***			0.030***	
GINI		0.007			-0.023***			-0.114***	
PopDens		0.001***			0.001***			0.000	
public procurement values, % GDP		0.352***			0.234***			0.349***	
social benefit, % GDP		-0.045***			-0.008			-0.033***	
subsidies to producers, % GDP		0.106			0.365***			0.310***	
total government expend., % GDP		-0.017			0.088***			0.115***	
total government revenues, % GDP		0.027			-0.121***			-0.136***	
Entry Regulation: Ele		-0.180***			-0.117***			-0.023**	
Vertical Intergration: Ele		0.216***			0.091***			0.011	
Public Ownership: Ele		-0.009			-0.124***			-0.053***	
year 2002	-0.617***	-0.672***	-0.612***	0.026	-0.126***	0.019	-0.152***	-0.193***	-0.154***
year 2004	-0.707***	-0.630***		0.368***	0.245***		-0.101***	-0.124***	
Observations	44774	44721	30198	42485	42436	29344	43424	43372	30163

* significant at 10%; ** significant at 5%; *** significant at 1%

6. Conclusions

This paper has presented new findings on possible determinants of consumers' satisfaction for four utilities in the EU 15 member states. Some countries, notably Italy Greece and Portugal show a significant extent of dissatisfaction, as compared with the benchmark we have selected, Belgium. While some individual characteristics in the samples, and some macroeconomic controls may contribute to explain the degree of satisfaction in Eurobarometer surveys 2002 to 2004, in our concluding remarks we focus on the impact of regulatory variables.

The utility reforms in Europe over the last twenty years have often assumed that efficiency and welfare would be enhanced by two institutional changes: privatization and liberalization. The two reforms are usually considered as related, but this is not always true, because in principle there may be liberalization without (full or partial) privatization of the incumbent; and because there may be privatization without (full or partial) liberalization. In fact in the EU and over time we can observe several patterns. Thus, in this paper we ask a simple question: are consumers happier with SGI in countries where these reforms have been implemented? Can we disentangle the effect on attitudes of privatization from liberalization?

We could not use regulatory variables for water, so we focus in this comment of the other three utilities (for a summary of results, see Table 17).

As for privatization, the OECD variable we use is the share of public ownership. Rather surprisingly, for telephone and for gas, consumers are more satisfied with access, price and quality in countries where public ownership is large, but the reverse is true for electricity.

One obvious measure of liberalization is the market share of the incumbent, and one would

expect that the smaller such share, the more competitive is the market, the lower the price for a given quality, and the higher the access, hence the higher consumers' satisfaction. This expectation is rejected by data for gas access, where satisfaction is positively correlated with the market share of the incumbent. It is instead confirmed by data for gas quality and prices and for telephone across all dimensions.

A second liberalization variable is 'free entry': this works as expected for electricity (on all dimensions), and for telephone access, but not for prices; for gas there is only a negative impact on access.

Vertical integration in gas has a negative impact on access satisfaction, a positive one on price and quality satisfaction. In electricity consumers' hare happier where systems are more vertically integrated.

Table 18: A summary of the effects of privatization, liberalization and vertical disintegration on consumers' satisfaction

	Effects on consumers' satisfaction								
	Fixed Telephone			Gas supply			Electricity		
	Access	Price	Quality	Access	Price	Quality	Access	Price	Quality
Public ownership (a smaller share of public ownership in the industry has…)	- ***	- ***	- ***	- ***	- ***	- ***	n.s.	+ ***	+ ***
Market structure (a smaller market share of incumbent has…)	+ ***	+ ***	+ ***	- ***	+ ***	+ ***	n.a.	n.a.	n.a.
Entry regulation (a larger freedom to entry has…)	+ ***	- ***	- *	- ***	n.s.	n.s.	+ ***	+ ***	+ **
Vertical integration (a less integrated industry has...)	n.a.	n.a.	n.a.	+ ***	- ***	- ***	- ***	- ***	n.s.

Note: * significant at 10%; ** significant at 5%; *** significant at 1%. n.a.= not available. n.s.= not statistically significant.

We consider these findings preliminary for several reasons. First, we need to check more in depth the consistency of sampling over time and across countries, because there are some anomalies in Eurobarometer data in some countries; second, we would check the risk of misinterpretation of the accessibility question, because increasing 'no access' in 2004 as reported in some countries does not seem credible; third, some of the variables in the OECD regulatory database may not fully capture the reforms; fourth, the time structure needs to be handled carefully, because 2000-2004 is a very limited time span for structural reforms; fifth, some of our results might be affected by omitted variable bias and we need also additional research on macroeconomic controls. Finally, in future we need to cross-check consumers' satisfaction with objective evidence.

Having said this, our empirical findings show that any expectation of a simple EU-wide positive linear relation between the extent of privatization-liberalization utility reforms and consumers' satisfaction does not seem supported by the available evidence.

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