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by

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**Abstract** The paper aims at analysing the relationship between self-rated health-status, satisfaction with health care services and socio-economic factors, in the context of different national health care systems in the enlarged European Union. The effects of socio-economic deprivation and the functioning of national health care systems on self-rated health status and satisfaction with health care services are investigated using the European Social Survey 2006 dataset (ESS3), and macro data provided by Eurostat (2007) and the World Health Organization (2007). Socio-economic deprivation is measured both at the micro-level (using indicators of economic strain, household income, education, employment status and belonging to discriminated groups), and the macro-level (national poverty rates, the values of poverty thresholds, quintile ratios and GDP per capita). The performance of national health care systems is quantified with the help of two indexes, designed for the purpose of the present study: an index of total health care provisions and an index of governmental commitment to health care. The following countries are included in the analysis: Belgium, Bulgaria, Denmark, Finland, France, Germany, Hungary, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden, and the United Kingdom.

**Reference** IRISS Working Paper 2007-14, CEPS/INSTEAD, Differdange, Luxembourg

**URL** <http://ideas.repec.org/p/irs/iriswp/2007-14.html>

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# Self-Assessed Health Status and Satisfaction with Health Care Services in the Context of the Enlarged European Union

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PRELIMINARY VERSION

November 12, 2007

## Abstract

The paper aims at analysing the relationship between self-rated health-status, satisfaction with health care services and socio-economic factors, in the context of different national health care systems in the enlarged European Union.

The effects of socio-economic deprivation and the functioning of national health care systems on self-rated health status and satisfaction with health care services are investigated using the European Social Survey 2006 dataset (ESS3), and macro data provided by Eurostat (2007) and the World Health Organization (2007). Socio-economic deprivation is measured both at the micro-level (using indicators of economic strain, household income, education, employment status and belonging to discriminated groups), and the macro-level (national poverty rates, the values of poverty thresholds, quintile ratios and GDP per capita). The performance of national health care systems is quantified with the help of two indexes, designed for the purpose of the present study: an index of total health care provisions and an index of governmental commitment to health care. The following countries are included in the analysis: Belgium, Bulgaria, Denmark, Finland, France, Germany, Hungary, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden, and the United Kingdom.

Keywords: Self-assessed health status, satisfaction with health care services, health care systems in Europe, governmental commitment to health care

JEL classification: I18, H51

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## ***Introduction***

Since late 80s, a substantive body of research documented the welfare retrenchment in the European countries. The trend to increasing individuals' dependence on the market is identified in many policy areas. In health care, the recommodification is rather a by-product of government initiatives than an intentional shift (Bonoli et. al., 2000). While common socio-economic challenges prompted the reforms, the actual policies are related to the institutional design of individual country health systems. Subsequently, the problems and strategies in state-controlled systems ought to be different from the ones encountered in insurance-based systems (Bonoli et.al., 2000: 38). In this context, the analysis of government commitment to health care and of its effects on health status becomes highly important.

Health status is playing a major role in cross-country comparisons on social policy outcomes, individual wellbeing and human development. Its relevance to the monitoring of social inclusion process seems undisputed (Atkinson et. al., 2002; Rico et. al., 2004). That is why, besides the World Health Organization (WHO), other transnational agencies such as World Bank (WB), the Organization for Economic Cooperation and Development (OECD), and Eurostat produced a range of measures and established databases with indicators of health status.

Traditionally, health research focused on mortality. In addition, data on deaths serve for estimating life expectancy at birth (or at various ages), a widely employed indicator. It was also included among the original Laeken indicators, but then kept just as a contextual factor (Marlier et al, 2007). While lethal outcomes are important to health research, it is equally necessary to capture the non-lethal ones, especially long-lasting illness which hampers everyday activity. Healthy life expectancy (HALE) at birth is a summary measure of both. It tells the average number of years that a person can expect to live in "full health" (WHO, 2007). As such, HALE is relevant for aggregate cross-country comparison by pinpointing the significantly lower levels in some of the new EU Member States. Nonetheless, it does not reveal disparities within countries. From the social inclusion perspective, an indicator allowing comparison between different socio-economic groups in terms of healthy life years would be more than welcome (Marlier et. al., 2007: 172).

The relationship between socio-economic position and health status in 20 European states was investigated in a recent study of Makerback, Meerding and Kunst (2007). The authors draw attention to the reciprocal influences between socio-economic position (as indicated by education, occupational category and income) and the probability of facing illness: bad health constitutes a determinant but also a consequence of low socio-economic position. They develop a conceptual model of the longitudinal relationship between health development and social and economic career<sup>i</sup>. Looking at the "subjective" indicator of self-reported health status<sup>ii</sup>, the authors found that the

earnings of those reporting good health were four times higher than the earnings of those reporting poor health. Disparities between average earnings according to the health-status category were more prominent for better educated persons than for those with low schooling (see Makerback et.al., 2007: Figure 1, p. 34). Inequalities in the probability of reporting bad health were significant for all age categories, although they were lower in the case of those older than 60. These findings were supported by disparities in the incidence of various diseases (see Makerback et.al., 2007: Figure 3, p. 71), mental health problems and premature mortality (Makerback et.al., 2007: pp. 72-76).

Eastern European countries, most notably Bulgaria and Romania, were absent from the majority of comparative studies on the influence of socio-economic factors and health care policy design on health status<sup>iii</sup>. The transition from universal to insurance-based health care provisions was expected to improve the efficiency of the management of the public health care fund, and strengthen personal responsibility for the protection of one's good health. Nevertheless, as compared to the EU-25, the two new member states register higher rates of persons reporting poor health: for 2003, 18.7% in Bulgaria and 18.6% in Romania (*European Quality of Life Survey, 2005*); for 2006, 16.5% in Bulgaria and 17.4% in Romania (*European Social Survey, 2007*). The incidence of heart diseases and chronic liver diseases is also higher in Bulgaria and Romania than in the EU-25 (see *Eurostat Yearbook 2006-07, p.103*). Dissatisfaction with the performance of the national health care systems is above the EU-15 average as well (*European Quality of Life Survey, 2005; European Social Survey, 2007*). The 2007 *Health in Europe* (based on the special *Eurobarometer272e* on health) also reports higher relative frequencies of self-reported bad health in Bulgaria and Romania, and finds that participation at screenings for cancer is significantly lower in these countries. New member states allocate lower proportions of their GDP for financing health care (WHO: 2007), and per capita governmental expenditures on health care are more modest as well. These factors might fuel dissatisfaction with health care services in the country. However, it is difficult to assert to what extent low governmental commitment to health care holds an influence on self-reported bad health, after controlling for other potential socio-economic determinants.

### ***Methodological considerations***

Self-assessed health status was originally viewed as a complement to the objective outcomes and a possible proxy for health needs. It aimed to capture socio-economic differences in health and thus included in the original Laeken set. Yet, its reliability in reflecting the real health condition is rather questionable: it is solely based on respondents' declarations in an interview-situation, biased in their own expectations of what "good health" means, and strongly marked by their social milieu and reference groups. Its ability to capture change over time is also disputed. Harmonization of the measurements and the comparability of data across countries arise problems as well<sup>iv</sup>.

The self-assessed health status has been dropped from the social inclusion portfolio until further methodological investigation (Marlier et. al., 2007). Nevertheless, it is employed in numerous studies focusing on the role of socio-economic gradients in health outcomes (Asthana et. al., 2004; Mackenbach and Bakker, 2003; Mellor and Milyo, 2001; Fiscella and Franks, 2000; Regidor, et. al., 2003). Despite its limitations, self-assessed health status is a useful measure for the construction of explanatory models that combine micro-data with macro-level indicators.

For the purposes of this study, micro-data provided by the third round of the European Social Survey (2006) was used, merging the international dataset with the Hungarian and Romanian datasets. Non-EU countries were excluded from the analysis, as well as Estonia, due to the lack of comparable data on household income. Country-level indicators of the macroeconomic context and the performance of health care systems were added to the joint dataset.

In order to go beyond the differences between national health care systems *as such*, and analyze the influence of *characteristics of how health care systems function*, two indexes were built: an index of health care provisions at the country level, and an index of governmental commitment to health care. Country-level data provided by the 2007 World Health Report was used.

The index of total health care provisions was computed as the sum of the standardized values (Z-scores) of:

1. Total expenditures on health as % of GDP (latest data provided by WHO for 2004)
2. Per capita total expenditures on health at international dollar rate (latest data provided by WHO for 2004)
3. Hospital beds/ 10000 population (latest data provided by WHO for 2003-2005)
4. Physicians per 1000 persons (latest data provided by WHO: 2003-2004)

The former two variables indicate the generosity of health care provisions, whereas the latter two can be seen as proxies for the access to health care services<sup>v</sup>. The distributions of these variables and the index are presented in the Appendix, Table A.2.

Bambra (2005a, 2005b) developed an index of decommodification of health care services which is based on three indicators: (1) the share of private expenditures in the overall expenditures on health, (2) the share of private hospital beds in the total number in the country, and (3) the degree of coverage of the health care system, i.e. share of population with public health care insurance. Only the first indicator was employed for constructing the index of governmental commitment to health care, namely the share of private versus public expenditures in the overall expenditures on health in the country. The reasons for not including data on private versus public hospital beds reside in the fact that, to our knowledge, there is no accurate source of information with respect to the number of beds in private hospitals for Eastern European countries. In addition, beds in public hospitals may be used contra-cost as well, either through formal payments by persons without health insurance or through informal payments to the

medical staff in order to receive better quality treatment. The practice of informal payments is widespread in Eastern European countries, and it constitutes a hidden and difficult to measure dimension of commodification of health-care services (Murthy, A. and Mossialos E., 2003, Lewis, M., 2000), which did not enter Bambra's decommodification index. The third indicator used by Bambra, the degree of coverage (reported by Bambra for 1980!), was omitted due to the lack of reliable information on the percentage of persons without health care insurance for the new member states. Moreover, the conditions of entitlement and the amount of services available free-of-charge differ considerably among countries, even when they have similar systems.

Consequently, the following three indicators were included in the index of governmental commitment to health care:

1. General government expenditure on health as % of total expenditures on health (latest data provided by WHO: for 2004)
2. Per capita general government expenditures on health at international dollar rate (latest data provided by WHO: for 2004)
3. The negative of out-of-pocket expenditures on health as % of total private expenditures, weighted by the standardized share of private expenditures in the total expenditures on health (latest data provided by WHO: for 2004)

The index is the sum of the three standardized variables (z-scores), out-of-pocket expenditures taken into account as the negative of its value (i.e. the higher the out-of-pocket expenditures, the lower the index). The first indicator measures the degree of public financing of the overall health care expenditures in the country. The second reports on the actual value of public financing for health care per capita. The third indicator measures the individual financial effort for acquiring health care services not covered either by the public or the private health care insurances. For countries in which private health insurance is poorly developed or not accessible for certain categories of the population (for example too expensive for those on low incomes), the share of out-of-pocket expenditures is high. This translates into a low level of decommodification of health-care services. High out-of-pocket expenditures also mean that the population assumes considerable risks in terms of acquiring adequate health-care provisions for situations not covered by their insurance, and the threat of not being able to pay for health care is obviously higher for the low-income strata.

The distribution of the index and the variables in its composition is presented in the Appendix, Table A.3.

In order to account for inter-country differences in terms of poverty, income inequality and economic profiles, macro data provided by Eurostat and the 2007 *Joint Report on Social Inclusion* of the European Commission were used. The poverty rates and the national values of the poverty threshold (EC methodology), quintile ratios, and GDP per capita were used in controlling for factors of the macroeconomic context. The distributions of these variables are presented in the Appendix, Table A.4.

Explanatory models were constructed for self-rated bad and very bad health (using logistic regressions) and the satisfaction with the health care services in the country (using multilinear regressions). For each dependent variable, three models were tested: (1) *explanatory models based on cross-country differences*, using as predictors micro level indicators of socio-economic deprivation and introducing country dummies (reference category=Romania); (2) *explanatory models based on differences between the performance of health care systems*, using as predictors micro level indicators of socio-economic deprivation and the indexes of health care provisions and governmental commitment for health care (country-level data); (3) *explanatory models based on differences between the performance of health care systems after controlling for the economic context*, which use the same predictors, but control for indicators of poverty, income inequality, and the GDP per capita (country-level data).

Household income is an important potential predictor of self-rated health status, but it is unfortunately absent from the original datasets: respondents were only asked to rank their household into pre-established income categories. Based on these rankings and the structure of the household, we constructed an estimate for household income per equivalent adult, and used this new variable in the analysis (the logarithm of its value). The way in which the variable was built is presented in the Appendix, Methodological Note 1.

Given that the probability of facing illness is considerably higher for the older age categories, the explanatory models were tested separately for those younger than 55 (15-54 years old) and those aged 55 or older.

### ***Cross-country differences in self-rated bad health and satisfaction with health care services***

The first question to be addressed was whether there is a correspondence between the probability of reporting bad health and the satisfaction with health care services, measured at the country-level. If so, which are the underlying socio-economic factors responsible for this correspondence? Do they reside rather in micro-level variables of social status, or macro-level factors related to the performance of health care systems? Which is the importance of governmental commitment to health care, as compared to overall health care provisions in the country?

We found an apparent correspondence between the two indicators for the fifteen EU countries included in the investigation. Figure 1. presents the relation between the percentage of the population reporting bad or very bad health and the average score of satisfaction with the health care services in the country, based on micro-data provided by ESS3 (2006).



In countries such as Bulgaria, Hungary, Romania and Portugal the percentage of people reporting bad health exceeds 15%, and the average satisfaction score with health-care services is below 4 points. Bulgaria may be considered an outlier case, with an average satisfaction score of only 2.56. At the opposite end of the scatter plot, countries such as Belgium and Finland have a relatively small share of respondents reporting bad health (less than 5%), and the average satisfaction-score with health care services is around 7 points. The correlation between the two variables is 0.86 (Sig.=0.000).

The next step was to explore whether differences in self-reported bad health and satisfaction with health care services could be explained by differences in the governmental commitment to health care and overall health care provisions available in the country. Multilinear regression models were constructed for the two outcome variables (self-assessed bad health and satisfaction with health care services), taking countries as the units of analysis and employing the two indexes as potential predictors.

The model explains 48% of the variance of the proportion of respondents rating their health as bad or very bad (R-Square=0.48). However, only the index of governmental commitment has a statistically significant effect. A one-unit increase of the index of governmental commitment leads, on average, to a decrease of the percent of respondents declaring bad health by 1.86% ( $b=-1.86$ , Sig.=0.005).

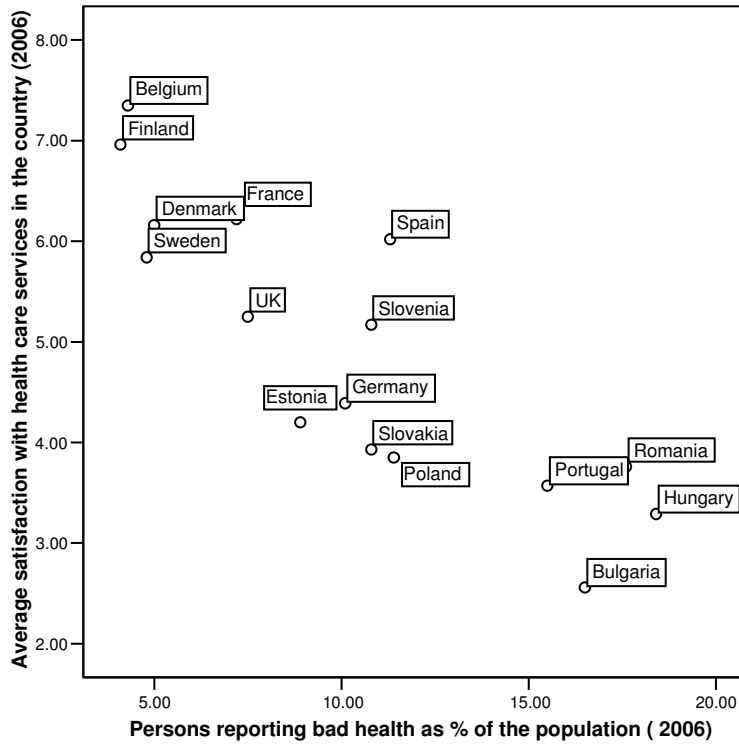
As illustrated by Figure 2., countries with strong governmental commitment to health care and universal coverage such as Sweden and Denmark have low rates of reporting bad health, whereas Eastern European countries scoring low on the index of governmental commitment present high rates of reporting bad health.

The second multilinear regression performed, which tries to predict the satisfaction with health-care services, has a slightly smaller goodness of fit of the model: only 32% of the variance is explained (R-Square=0.32). Again, the index of governmental effort holds a statistically significant direct effect, whereas the index of total health care provisions does not. A one unit increase of the index of governmental commitment leads, on average, to an increase of the country-level satisfaction score by 0.46 points ( $b=0.46$ , Sig.=0.025).

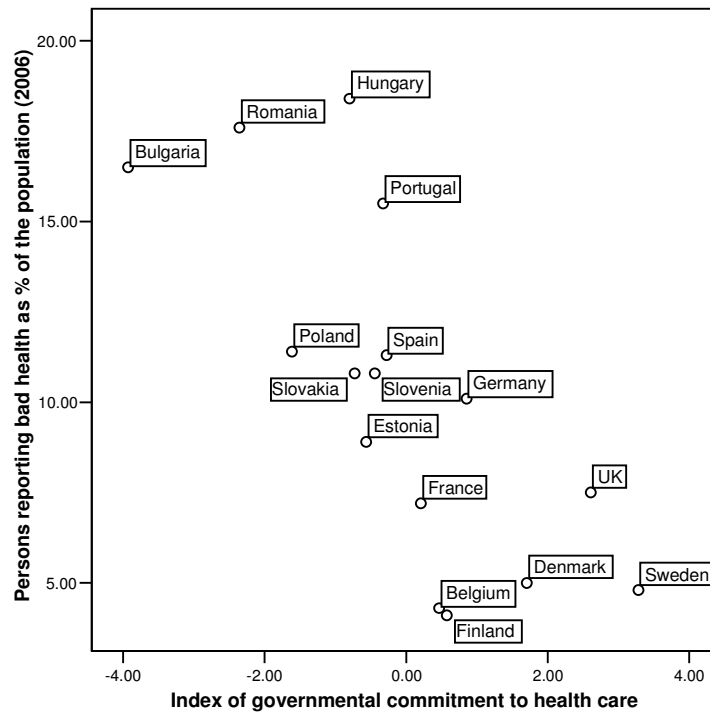
Countries with Beveridge-type universal systems, such as Sweden, the UK and Denmark score high on the scale of satisfaction with health care services, as well as on the index of governmental commitment to health care (see Figure 3.). This is consistent with the measures of Bambra's health care decommodification index (Bambra, 2005). Countries with recently reformed health care systems (such as Eastern European countries and Portugal) get low scores for both indicators. It is noteworthy that countries with Bismarckian insurance-type systems such as Germany, France and Belgium, although get similar scores on the index of governmental commitment, differ considerably in terms of average satisfaction of the population. Respondents from Germany are, on average, much less satisfied with health care services than respondents from France and Belgium.

The relation between the index of health care provisions and satisfaction with health care services (see Figure 4) is not straightforward: countries such as Bulgaria, Slovakia, Slovenia, the UK (label not shown on the graph), and Spain have almost identical indexes of health care provisions, however, the average satisfaction with health care services is considerably different, ranging from 2.5 points in Bulgaria to 7 points in Finland. Germany has the highest score on the health care provisions index (almost 4 points), but its average score of satisfaction is very low, only 4.39 points. Belgium and France, countries with well developed private insurance systems, score high on both dimensions. Romania and Poland, countries marked by strong regional differences and the rural-urban divide in terms of access to health-care services, score low on both dimensions.

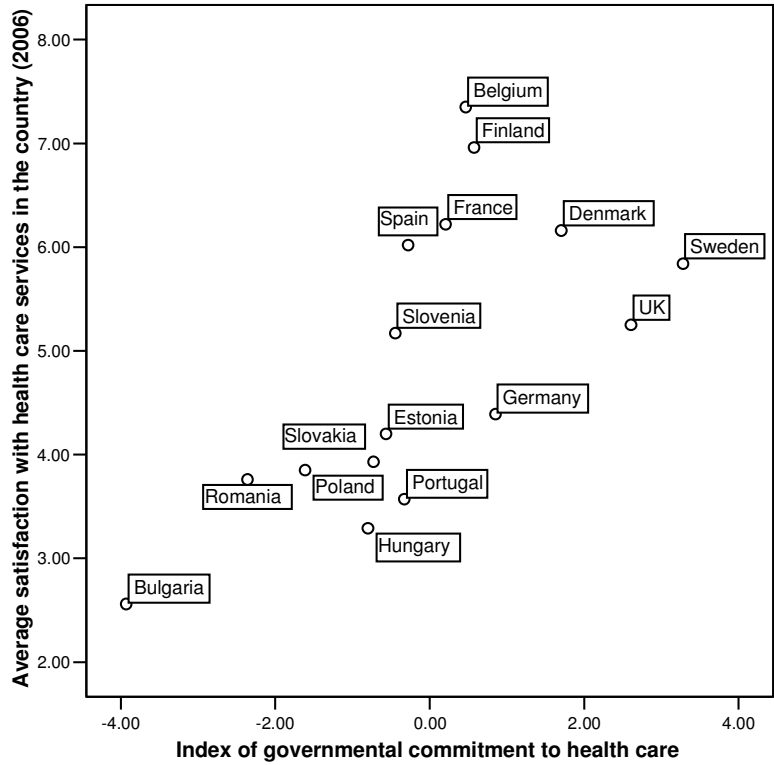
**Figure 1. The percent of the population reporting bad health and satisfaction with the health care services in the country (2006)**



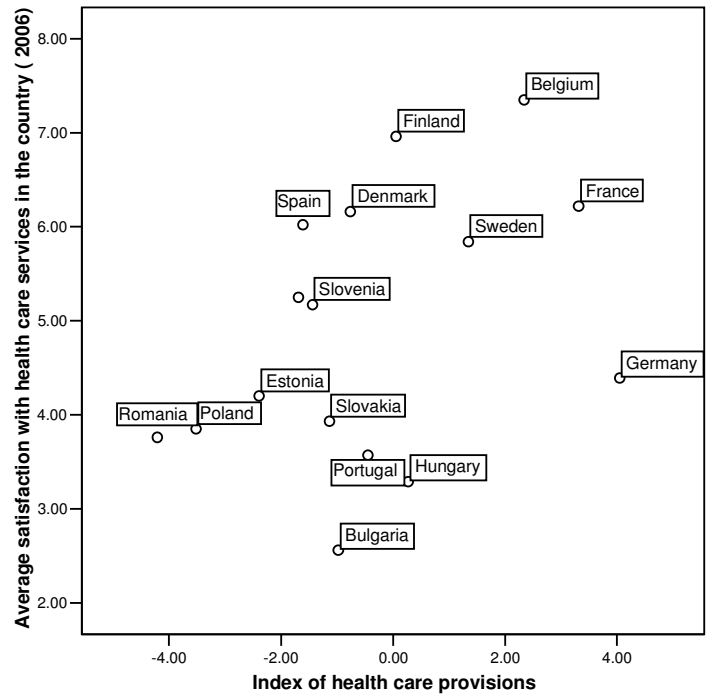
**Figure 2. Percent of the population reporting bad health and the index of governmental commitment to health care**



**Figure 3. Governmental commitment to health care and satisfaction with the health care services in the country (2006)**



**Figure 4. Health care provisions and satisfaction with the health care services in the country**



## ***Country-effects and micro-level predictors of self-rated bad health and satisfaction with health care services***

The next step was to look beyond cross-country differences and test the statistical significance of country-effects on individual respondents, after controlling for potential micro-level predictors.

The following set of potential predictors was employed for explaining the variance of the probability of reporting bad health and satisfaction with health care services:

- respondent's age (calculated in years)
- residence in urban versus rural areas (dummy variable, urban coded as "1")
- gender (dummy variable, males coded as "1")
- the logarithm of estimated household income per equivalent adult in Euro (see Appendix, Methodological Note 1 for the details of how the variable was built) (LOG income)
- self-assessed economic strain (the initial Likert-scale variable was recoded into a dummy, and declared economic strain coded as "1")
- ethnicity: belonging to an ethnic/ national minority in the country (dummy variable, minority status coded as "1")
- belonging to a discriminated group, according to the respondent (dummy variable, belonging to a discriminated group coded as "1")
- years of full time education (in years)
- unemployed status (dummy variable, being unemployed coded as "1")
- country dummies using Romania as a reference-category.

Interaction effects between estimated household income (LOG), respondent's economic strain, education and unemployed status were also introduced in the model. Strong covariances between estimated household income and subjective economic strain were found in each country, and this result is consistent with earlier reports (see Fahey, Whelan and Maitre, 2003).

Given that the analysis was performed separately upon two age categories (respondents younger than 54 and those aged 55 or above), the effects of age on the predicted variables might be disturbed. Therefore age played the role of a control-variable in the model, and interpreting its effects as such was outside of our primary purposes.

The ESS3 dataset does not allow to identify respondent's ethnicity, only whether they regard themselves as belonging to ethnic/ national minority groups or not. Therefore we were unable to investigate the specific situation of Roma persons, an ethnic minority with reportedly worse health and more difficult access to health care services than majority populations<sup>vi</sup>. Introduced in the logistic regression model, the impact of ethnicity is not statistically significant. However, the effects of belonging to discriminated groups (regardless on what grounds discrimination occurred) are

significant. The two variables overlap to a certain extent (see Appendix, Methodological Note 2), therefore we decided to keep in the final model only the indicator of belonging to discriminated groups.

The following table presents the results of testing the explanatory models for the probability of reporting bad health, based on cross-country comparisons, separately for the two age categories:

**Table 1: Explanatory models of the probability of reporting bad health based on cross-country differences**

	Age: Younger than 55		Age: 55 or older	
	Nagelkerke R Square=0.16		Nagelkerke R Square=0.21	
	Exp.(B)	Sig.	Exp.(B)	Sig.
Age	1.054	.000	1.034	.000
Residence (urban/ rural)	1.079	.400	.948	.412
Estimated income (LOG)	.262	.000	.422	.000
Subjective economic strain	1.448	.471	1.161	.720
Belonging to a discriminated group	2.231	.000	1.913	.000
Gender	.852	.060	.802	.001
Years of full-time education	.871	.015	.888	.003
Unemployed	.287	.032	.377	.319
<i>Interaction: Estimated income *subjective economic strain</i>	1.209	.319	1.325	.076
<i>Interaction: Estimated income *education</i>	1.020	.353	1.021	.167
<i>Interaction: Estimated income *unemployed</i>	1.606	.044	1.395	.375
Country (categorical) reference= RO		.000		.000
Belgium	1.063	.825	.381	.000
Bulgaria	.662	.044	.805	.112
Germany	2.555	.000	1.633	.006
Denmark	1.983	.019	.699	.114
Spain	1.302	.326	1.639	.009
Finland	1.006	.985	.413	.000
France	1.830	.009	.638	.026
United Kingdom	2.238	.001	.828	.332
Hungary	1.542	.024	1.381	.024
Poland	1.116	.565	.839	.274
Portugal	1.022	.933	.742	.067
Sweden	1.839	.020	.532	.004
Slovenia	1.750	.019	1.333	.106
Slovakia	.874	.559	1.312	.117
<i>Constant</i>	.335	.179	.367	.095

The model explains 16% of the variance of reporting bad or very bad health for those younger than 54, and 21 % in the case of the older age category. In both cases, the strongest micro-level predictors are estimated household income, belonging to discriminated group, and years of full time education. The higher the household income, the lower is the probability of reporting bad health. Years of full time education have the same effect of decreasing the probability of reporting poor health, but the impact is less prominent. After controlling for all other potential predictors, persons belonging to discriminated groups are twice more likely to report bad health than persons from the mainstream. This holds for both age categories.

In the case of the younger age group, the probability of reporting bad health is lower for the unemployed persons than for those active on the labor market. The effects of area of residence (urban versus rural) and subjective economic strain are not statistically significant. Gender is statistically significant only for the older age category, males being less likely to report bad health than females. None of the interaction effects is statistically significant, except from the interaction between income and unemployed status (although sig.=0.044, thus very close to the threshold) in the case of persons below 55 years old. As one might expect, persons on higher incomes are more likely to report bad health in case that they are unemployed.

Looking at the country-effects, after controlling for the micro-level predictors, it can be noticed that, in the case of the younger age category, only respondents from Bulgaria are less likely to report bad health than those from Romania. *Ceteris paribus*, persons below 55 from Germany, UK, Denmark, Sweden, France, Slovenia, and Hungary are more likely to report bad health than those from Romania.

In the case of those older than 55, there are no statistically significant differences between respondents from Romania and Bulgaria. *Ceteris paribus*, the probability of reporting bad health is higher in Hungary, Germany and Spain than in Romania. Persons after 55 are less likely to report bad health in Belgium, Finland, Sweden, and France.

In order to explain the variance of satisfaction with the health care services, the same socio-economic micro level predictors were used, and self-reported bad health was included among the predictors. Country dummies were introduced using Romania as a reference category. Multilinear regression models were constructed for the two main age categories, accounting for the separate direct effects of potential predictors.

**Table 2: Explanatory models of the variance of the satisfaction with health care services based on cross-country differences**

	Respondents younger than 55			Respondents 55 or older		
	R-Square=0.287			R-Square=0.299		
	B	Beta	Sig.	B	Beta	Sig.
<i>(Constant)</i>	5.183		.000	2.317		.000
Age	-.013	-.055	.000	.034	.109	.000
Gender	.290	.057	.000	.267	.049	.000
Residence (urban/ rural)	-.091	-.017	.025	-.289	-.052	.000
Estimated income (LOG)	-.283	-.057	.000	-.134	-.026	.162
Economic strain	-.479	-.082	.000	-.574	-.097	.000
Belonging to a discriminated group	-.346	-.036	.000	-.445	-.035	.000
Reported bad health	-.472	-.040	.000	-.516	-.073	.000
Years of full-time education completed	-.013	-.018	.026	.003	.004	.701
Belgium	3.715	.386	.000	3.325	.299	.000
Bulgaria	-.979	-.076	.000	-1.173	-.103	.000
Spain	2.276	.209	.000	2.373	.166	.000
Finland	3.284	.341	.000	2.924	.298	.000
France	2.709	.292	.000	2.099	.203	.000
Hungary	-.503	-.043	.000	-.242	-.022	.077
UK	1.516	.164	.000	1.550	.158	.000
Germany	.901	.106	.000	.397	.043	.011
Denmark	2.393	.218	.000	2.287	.205	.000
Poland	-.071	-.007	.469	.249	.020	.095
Portugal	.059	.005	.636	-.357	-.033	.018
Sweden	1.985	.212	.000	2.080	.206	.000
Slovenia	1.385	.123	.000	1.070	.084	.000
Slovakia	.408	.036	.000	.439	.030	.008

For those younger than 55, the model explains 28.7% of the variance of satisfaction with health care services in the country, the strongest impact belonging to macro-level variables, i.e. living in a certain country. Among the micro-level explanatory variables, the strongest effect is held by economic strain: after controlling for other potential predictors, persons facing economic hardships give, on average, 0.5 points lower scores than those who do not. Persons younger than 55 reporting bad health give, on average, 0.47 points lower scores, whereas those aged 55 or older 0.51 points. Whereas in the case of the younger age category subjective economic strain has stronger effects on (di)satisfaction with health care services than reported bad health, in the case of older persons the impact of reported bad health is stronger.



Persons belonging to discriminated groups give, on average, almost 0.4 points lower scores than those from the mainstream. Males give, on average, slightly higher scores than females. Satisfaction with health care services is slightly higher in rural areas than in urban areas. The time spent in full time education has a modest negative effect on the satisfaction with health care services.

The strongest predictors of satisfaction with health care services are the macro-level indicators. In the case of the younger age category, as compared to respondents from Romania, those from Belgium give, on average, 3.7 points higher scores, those from Finland 3.2 point higher scores, and those from France 2.7 points higher. Respondents with similar socio-economic profiles from Denmark, Spain, Sweden, UK, and Slovenia also give more than one point higher scores than those from Romania, whereas those from Germany and Slovakia give slightly higher scores as well. Respondents from Bulgaria give, on average, almost one point lower scores, and those from Hungary 0.6 points lower scores than respondents from Romania, after controlling for micro-level explanatory factors.

In the case of respondents aged 55 or above from Belgium, Finland, Spain, Denmark, Sweden, and France satisfaction scores are considerably higher than in Romania (2-3 points). For those from the UK and Slovenia, the scores are only around one point higher. Slightly greater scores are assigned by respondents from Slovakia (0.3 points) and Germany (0.26 points) as well. Just in the case of the younger age category, older respondents from Bulgaria give, on average, one point less, those from Portugal 0.5 points less, and those from Hungary 0.3 points less.

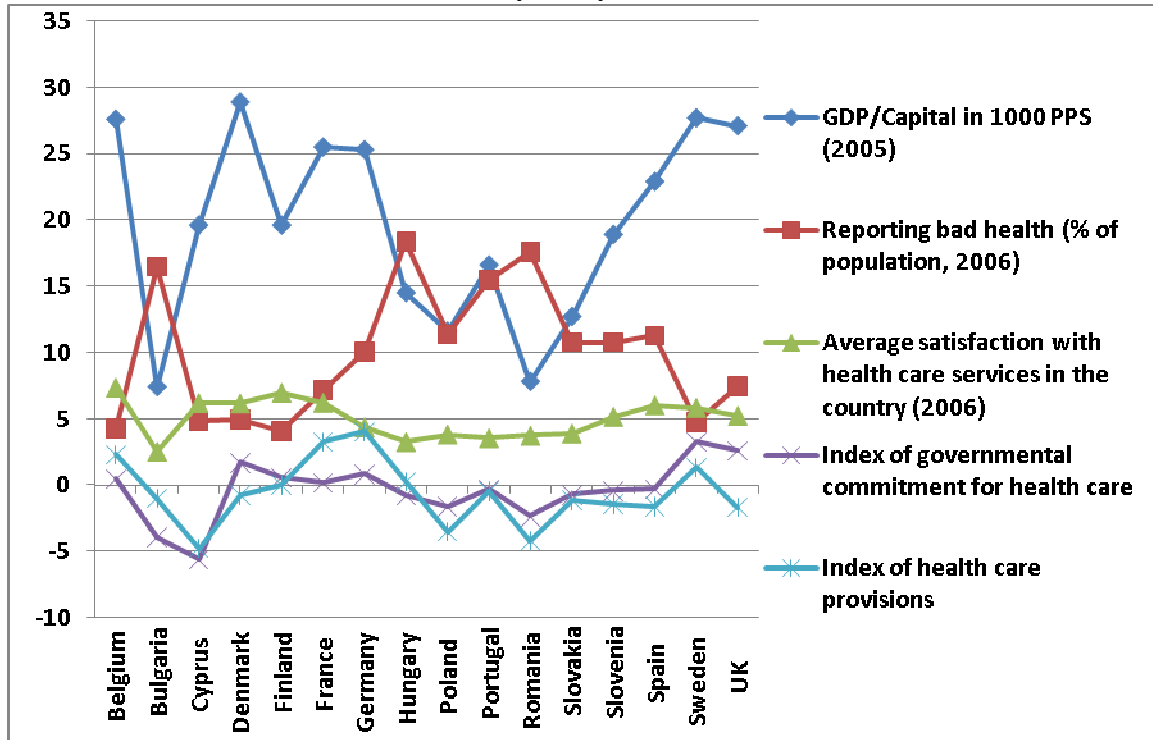
### ***Explanatory models based on differences between the performance of health care systems***

The next sections try to translate the “country-effects” from the previous model into cross-national differences in terms of health care provisions, governmental commitment to health care, and factors of the macro-economic context which influence these variables and shape their relationships with self-rated health status and satisfaction with health care services.

Consequently, a second explanatory model was built, which accounts for the separate effects of the micro-level determinants identified in the first explanatory models, and the characteristics of health care provisions and services at the national level. The latter effects are estimated with the help of the index of general health provisions and the index of governmental commitment to health care. The third explanatory model re-tests the direct effects of country-level health care provisions and governmental commitment to health care, after controlling for selected macro-level socio-economic factors: the poverty rate, the value of the poverty threshold, quintile ratio, and GDP per capita.

The following figure illustrates the relations between GDP per capita, the indexes of health care provisions and governmental commitment to health care, the probability of reporting bad health, and average satisfaction with health care services in the country. It is important to bear in mind that the number of countries introduced in the analysis is small (only fifteen countries), and interpretations of the relationships between variables ought to be cautious.

**Figure 5. Health care provisions, governmental commitment to health care and GDP per capita**



As expected, there is a noticeable correspondence between the GDP per capita and the two indexes. The incorporation of the amount of money spent on health care per individual (overall and by the government) in the two indexes is partly responsible for these correlations. Nevertheless, the correlations are too strong to be explained only by that fact. A simple linear regression indicates that 76% of the variance of the index of health care provisions is explained by the variance the GDP per capita ( $R\text{-Square}=0.766$ ,  $\text{Beta}=0.885$ ,  $\text{Sig.}=0.000$ ). The relation between the GDP per capita and the index of governmental commitment to health care is weaker: only 31% of the variance is explained ( $R\text{-Square}=0.316$ ,  $\text{Beta}=0.604$ ,  $\text{Sig.}=0.017$ ). There are no straightforward correspondences between the GDP per capita and subjective evaluations of health care services in the country, as well as one's own health status.

**Table 3: Explanatory models of the probability of reporting bad health based on the IGC and IHC. The 15-54 age category**

Respondents younger than 55	Model II.		Model III.	
	Nagelkerke R Square=0.150		Nagelkerke R Square=0.152	
Predictors	Exp.(B)	Sig.	Exp.(B)	Sig.
Age	1.055	.000	1.055	.000
Residence (urban/ rural)	1.096	.299	1.095	.307
Estimated income (LOG)	.230	.000	.231	.000
Economic strain	1.290	.607	1.328	.570
Belonging to a discriminated group	2.206	.000	2.279	.000
Gender	.862	.079	.855	.064
Years of full-time education	.870	.013	.870	.013
Being unemployed	.228	.009	.257	.017
Interaction: income*economic strain	1.254	.218	1.249	.233
Interaction: income*education	1.022	.285	1.021	.310
Interaction: income*unemployed	1.770	.013	1.660	.028
Index of governmental commitment to health care	1.161	.000	.980	.780
Index of total health care provisions	1.036	.080	.919	.043
<i>Constant</i>	.624	.566		
Poverty threshold (Z-scores)			1.029	.902
Poverty rate (Z-scores)			.725	.001
Quintile ratio (Z-scores)			1.145	.037
GDP/capital (z-scores)			1.413	.179
<i>Constant</i>			.634	.580

In the case of respondents younger than 55, the strongest predictors of reporting bad health are household income and belonging to discriminated groups. In both explanatory models, the probability of reporting bad health decreases considerably when household income increases. The years of full-time education also decrease the probability of reporting bad health, but the effects are only moderate. Persons who regard themselves as members of discriminated groups are twice more likely to report bad health than those who do not. All other conditions being equal, unemployed persons are less likely to report bad health. The interaction between income and unemployed status remains significant, as in the first model: persons with high incomes are more likely to report bad health in case that they are unemployed.

When we do not control for the macro-economic context, persons from countries with higher indexes of governmental commitment to health care are slightly more likely to report bad health. However, after controlling for macro-economic variables, the latter relationship is no longer statistically significant. In the third explanatory model, the index of total health care provisions appears as statistically significant, persons from countries with higher indexes being slightly less likely to report bad health.

The impact of macro-economic factors on the probability of reporting bad health is weaker than the effects of micro-level predictors. Persons from countries with higher poverty rates are slightly less likely to report bad health, after controlling for other

potential predictors. In countries where the quintile ratio is higher, the probability of reporting bad health is higher as well, on average. This result is consistent with evidence from previous studies on the negative influence of income inequalities on self-rated health status (Hildebrand and Van Kerm, 2005).

**Table 4: Explanatory models of the probability of reporting bad health based on the characteristics of health care systems.**

**The 55+ age category**

	Model II.		Model III	
Respondents 55 or older	Nagelkerke R Square=0.155		Nagelkerke R Square=0.191	
Predictors	Exp.(B)	Sig.	Exp.(B)	Sig.
Age	1.035	.000	1.035	.000
Residence (urban/ rural)	.974	.675	.952	.444
Estimated income (LOG)	.316	.000	.352	.000
Economic strain	.589	.164	.590	.171
Belonging to a discriminated group	1.695	.000	1.759	.000
Gender	.811	.001	.811	.001
Years of full-time education	.880	.001	.893	.004
Being unemployed	.358	.281	.402	.344
Interaction: income* economic strain	1.705	.000	1.722	.000
Interaction: income*education	1.029	.041	1.020	.169
Interaction: income*unemployed	1.423	.332	1.335	.433
Index of governmental commitment to health care	.953	.086	.817	.000
Index of total health care provisions	1.011	.493	.864	.000
(Constant)	.593	.379		
Poverty threshold (Z-scores)			.915	.593
Poverty rate (Z-scores)			.579	.000
Quintile ratio (Z-scores)			1.279	.000
GDP/capital (z-scores)			1.482	.026
(Constant)			.476	.225

Micro-level predictors have stronger effects than macro-economic factors in the case of the older age category as well. The effects follow a similar pattern to the one found in the previous case, except from the significant impact of gender: males are less likely to report bad health than females. Another difference consists of the significant interaction effect between income and subjective economic strain: all other conditions being equal, persons with higher incomes are more likely to report economic strain in case that their self-assessed health status is poor.

For those aged 55 or above, the index of governmental commitment remains statistically significant after controlling for variables of macro-economic context, respondents from countries with higher governmental commitment for health care being less likely to report bad health. The effect of total health care provisions is significant as well, persons from countries with higher indexes of total health care provisions being less likely to report bad health. As in the case of the younger age

category, persons from countries with higher poverty rates are less likely to report bad health, *ceteris paribus*. Persons living in countries with higher quintile ratios and higher GDP per capita are more likely to report bad health than those from more equal and less wealthy countries.

To summarize: both in the case of the younger (below 55) and the older (above 55) age categories, the strongest effects on the probability of reporting bad health are held by micro-level factors: household income and belonging to discriminated groups. Keeping constant potential macro-economic determinants (indicators of poverty, income inequality and the GDP/capita), the probability of reporting bad health decreases with the increase of the total health care provisions. The index of governmental commitment for health care has a significant effect on decreasing the probability to report bad health effect only for persons aged 55 or above.

**Table 5: Explanatory models for the satisfaction with the health care services in the country. The 15-54 age category**

	Model II.			Model III		
Respondents younger than 55	R Square=0.136			R Square=0.242		
Predictors	B	BETA	Sig.	B	BETA	Sig.
Age	-.018	-.073	.000	-.016	-.066	.000
Gender	.279	.055	.000	.307	.060	.000
Residence	-.423	-.080	.000	-.211	-.040	.000
Estimated income (LOG)	.780	.156	.000	-.086	-.017	.211
Economic strain	-.480	-.083	.000	-.548	-.094	.000
Belonging to a discriminated group	-.223	-.023	.005	-.439	-.045	.000
Reported bad health	-.516	-.044	.000	-.507	-.043	.000
Years of full-time education completed	-.012	-.017	.057	-.020	-.029	.000
Index of governmental commitment to health care	.177	.118	.000	-.117	-.078	.000
Index of health care provisions	.092	.089	.000	.132	.128	.000
(Constant)	3.908	-	.000	-	-	-
Poverty threshold (Z-scores)				1.440	.572	.000
Poverty rate (Z-scores)				1.058	.402	.000
Quintile ratio (Z-scores)				-.856	-.310	.000
GDP per capita (Z-scores)				-.359	-.145	.000
(Constant)				6.289	-	.000

As one might expect, in the explanatory models of satisfaction with health care services macro-level variables have stronger effects than micro-level predictors. In Model II for the younger age category, a one-unit increase of the index of governmental commitment for health-care leads, on average, to a 0.17 points increase of the score of satisfaction with health care services. Its direct effect is stronger than the effect of general health care provisions (Beta=0.116 versus 0.089). Nonetheless, after controlling for macro-economic factors, its effect becomes negative: the higher the governmental commitment, the lower the satisfaction score. The positive effect of total health care

provisions is maintained. On average, each one-unit increase of the index of general health care provisions leads to a 0.128 points increase of satisfaction with health care services.

According to both models, persons who report bad health or economic strain mark, on average, more than 0.5 points less on the satisfaction score. Estimated household income is significant only in Model II. After controlling for macro-economic factors, the impact of household income is not significant. Male respondents give, on average, 0.3 point higher scores. Respondents from urban areas give, on average, lower scores than those from the rural. Respondents who regard themselves as members of discriminated groups give, on average, lower scores than those who do not feel discriminated. It is noteworthy that after controlling for the macro-economic factors (Model III.), the effects of belonging to discriminated groups strengthen, whereas those of residence weaken.

As presented in Model III., both the poverty threshold and the poverty rate have significant direct effects on the satisfaction with the health care system. All other conditions being equal, persons from countries with higher poverty rates are more satisfied with the health care services in their country. The higher the value of the poverty threshold, the higher is the satisfaction with health care services. The quintile ratio has a considerable negative effect on the satisfaction with health care services. The effects of GDP/capita are less prominent than those of other macroeconomic factors: however, all conditions being equal, persons from countries with higher GDP/capita are, on average, less satisfied with health care services than respondents from countries with lower GDP/capita.

In the case of those aged 55 or older (see Table 5), the pattern is different. After controlling for macro-economic factors, neither the index of health care provisions, nor the index of governmental commitment is statistically significant. The strongest predictors of the satisfaction with the health care system are the indicators of poverty and income inequality, with similar effects as in the explanatory model for younger respondents. The GDP/capita is not statistically significant, after controlling for the other factors.

Unlike in the case of the younger age groups, estimated household income has a significant effect on satisfaction with health care services, though its effect weakens after controlling for the macroeconomic factors as well. Similarly, rural-urban disparities in the average satisfaction with health-care services lessen after controlling for country-level indicators of poverty and income inequality. All other micro-level predictors maintain their effects, the strongest impact being held by subjective economic strain and self-rated bad health.

**Table 6: Explanatory models for the satisfaction with the health care services in the country. The 55+ age category**

	Model II.			Model III		
Respondents 55 or older	R Square=0.183			R Square=0.264		
Predictors	B	BETA	Sig.	B	BETA	Sig.
Age	.037	.118	.000	.032	.102	.000
Gender	.285	.052	.000	.299	.055	.000
Residence	-.601	-.107	.000	-.386	-.069	.000
Estimated income per equivalent household member	.857	.164	.000	.261	.050	.006
Economic strain	-.735	-.124	.000	-.615	-.104	.000
Belonging to a discriminated group	-.287	-.023	.023	-.453	-.036	.000
Reported bad health	-.685	-.097	.000	-.579	-.082	.000
Years of full-time education completed	-.015	-.025	.024	-.025	-.042	.000
Index of governmental commitment to health care	.256	.165	.000	.008	.005	.840
Index of health care provisions	-.024	-.021	.076	.036	.031	.140
(Constant)	.910	-	.014			
Poverty threshold (Z-scores)				1.141	.429	.000
Poverty rate (Z-scores)				.984	.347	.000
Quintile ratio (Z-scores)				-.924	-.316	.000
GDP per capita (Z-scores)				-.241	-.092	.056
(Constant)				2.837		.000

## Conclusions

The present study tested explanatory models of the probability to report bad health and satisfaction with health care services, using as predictors micro-level indicators of socio-economic situation, indicators of health care provisions and governmental commitment to health care, and selected indicators of the macroeconomic context for fifteen countries of the enlarged EU. Given the higher probability of facing illness for the older age groups, the analyses were performed separately for those below the age of 55 and the older age category.

A strong impact of micro-level indicators of poverty and social exclusion (low income and belonging to discriminated groups) on increasing the probability of reporting bad health was found for both age categories. The effects remained considerable even after controlling for macro-level predictors. Higher values of the index of overall health care provisions and the index of governmental commitment to health care decreased the probability of reporting bad health only in the case of the older age category.

After controlling for other potential predictors, persons reporting bad health and facing economic strain were less satisfied with the health care services from their countries. The influence of estimated household income was not statistically significant for the younger age category, and rather weak for the older age category. The index of

governmental commitment to health care and the index of overall health care provisions held positive effects on satisfaction with health care services only in the case of younger persons. The strongest predictors of satisfaction with health care services consisted of macro-economic factors and the degree of income inequality in the country.

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## Appendix

**Table A.1: Comparing 2006 survey data  
on the relative frequency of self-rated bad health**

	Eurobarometer 2007 (Fieldwork: Oct.- Nov. 2006)	European Social Survey, 3 <sup>rd</sup> round, 2007 (Fieldwork: Jun.-Jul. 2006)
<b>Belgium</b>	5	4.3
<b>Bulgaria</b>	14	16.5
<b>Cyprus</b>	5	4.9
<b>Denmark</b>	6	5
<b>Finland</b>	6	4.1
<b>France</b>	6	7.2
<b>Germany</b>	7	10.1
<b>Hungary</b>	15	18.4
<b>Poland</b>	12	11.4
<b>Portugal</b>	9	15.5
<b>Romania</b>	10	17.6
<b>Slovakia</b>	8	10.8
<b>Slovenia</b>	7	10.8
<b>Spain</b>	7	11.3
<b>Sweden</b>	6	4.8
<b>UK</b>	8	7.5

**Sources:** Eurobarometer, Health in the European Union, September, 2007  
European Social Survey, October 2007. Figures indicate the percentage of respondents who declared that their health is bad or very bad. For inter-survey differences higher than 2.5%, the cells were shaded.

**Table A.2: Country-level indicators of total health care provisions and national values of the index**

	<b>Total expenditures on health as % of GDP (2004)</b>	<b>Per capita total expenditures on health at international dollar rate (2004)</b>	<b>Hospital beds/ 10000 population (2004 or 2005)</b>	<b>Physicians per 1000 persons (2003-2004)</b>	<b>Index of total health care provisions</b>
Belgium	9.7	3133	53	4.49	<b>2.34</b>
Bulgaria	8	671	64	3.56	<b>-0.98</b>
Cyprus	5.8	1128	34	2.34	<b>-4.76</b>
Denmark	8.6	2780	38	2.93	<b>-0.76</b>
Finland	7.4	2203	70	3.16	<b>0.05</b>
France	10.5	3040	75	3.37	<b>3.32</b>
Germany	10.6	3171	84	3.37	<b>4.05</b>
Hungary	7.9	1308	79	3.33	<b>0.27</b>
Poland	6.2	814.1	53	2.47	<b>-3.52</b>
Portugal	9.8	1896.9	37	3.42	<b>-0.45</b>
Romania	5.1	432.7	66	1.9	<b>-4.21</b>
Slovakia	7.2	1061	69	3.18	<b>-1.14</b>
Slovenia	8.7	1815	48	2.25	<b>-1.44</b>
Spain	8.1	2099	35	3.3	<b>-1.61</b>
Sweden	9.1	3532	52	3.28	<b>1.35</b>
UK	8.1	2560	39	2.3	<b>-1.69</b>

**Source:** World Health Statistics – the 2007 Report of the World Health Organization.

The index of total health care provisions was constructed as the simple additive index of the for standardized indicators (sum of Z-scores).

**Table A.3: Country level indicators of governmental commitment to health care and national values of the index**

	<b>General government expenditure on health as % of total expenditures on health (2004)</b>	<b>Out-of-pocket expenditures as % of total private expenditures on health (2004)</b>	<b>Per capita general government expenditures on health at international dollar rate (2004)</b>	<b>Index of governmental commitment to health care</b>
Belgium	71.1	83.5	2228	0.47
Bulgaria	57.6	98	386	-3.93
Cyprus	44.3	93.4	499	-5.61
Denmark	82.3	81.3	2287	1.7
Finland	77.2	80.8	1700	0.57
France	78.4	34.9	2382	0.21
Germany	76.9	57.5	2440	0.85
Hungary	71.6	88	937	-0.8
Poland	68.6	89.6	558.8	-1.61
Portugal	71.6	79.4	1358.8	-0.33
Romania	66.1	93.4	286	-2.36
Slovakia	73.8	73.1	782	-0.73
Slovenia	75.6	39.5	1372	-0.44
Spain	70.9	81	1488	-0.28
Sweden	84.9	92	3000	3.28
UK	86.3	90.5	2209	2.61

**Source:** World Health Statistics – the 2007 Report of the World Health Organization.

The index of governmental commitment to health care services is the additive index of the standardized general governmental expenditures on health as % of total expenditures on health, the standardized per capita general expenditures on health, and the negative of the standardized out-of-pocket expenditures as % of total private expenditures on health, weighted by the standardized share of private expenditures as % of total expenditures on health.

**Table A.4: Country-level indicators of poverty and income inequality**

	Poverty threshold in 1000 EURO (2005)*	Poverty rate (2005 )	Quintile ratio (2005)	GDP/Capital in 1000 PPS (2005)
Belgium	18.8	15	4.1	27.6
Bulgaria	1.8	15	4	7.4
Cyprus	16.4	16	4.3	19.6
Denmark	19.4	13	3.5	28.9
Finland	16.7	12	3.5	19.6
France	18.1	13	4	25.5
Germany	19.3	13	4.1	25.3
Hungary	7.8	13	4	14.5
Poland	5.6	21	6.6	11.6
Portugal	9.9	20	8.2	16.6
Romania	1.4	18	4.9	7.8
Slovakia	7.5	13	3.9	12.7
Slovenia	12.8	12	3.4	18.9
Spain	15.2	20	5.4	22.9
Sweden	17.9	9	3.3	27.7
UK	20.5	19	5.6	27.1

\* **Note:** Poverty threshold computed for the annual income of a family composed of two adults and two dependent children at 60% median income per equivalent household member using the OECD-2 equivalence scale.

**Source:** For EU-25 data was provided by the 2007 Joint Report on Social Inclusion of the European Commission. For poverty rates, see Annex 1C, p.140. For the values of the poverty threshold, see Table 5, p. 18. For Bulgaria and Romania, poverty thresholds were estimated on the basis of data from the latest National Reports on Social Inclusion (2006).

**Table A.5: The probability of reporting bad health and average satisfaction with the health care services in the country (European Social Survey, 3<sup>rd</sup> Round, 2006)**

	Reporting bad or very bad health (% of population)	Average satisfaction with health care services in the country
Belgium	4.3	7.35
Bulgaria	16.5	2.56
Cyprus	4.9	6.19
Denmark	5	6.16
Finland	4.1	6.96
France	7.2	6.22
Germany	10.1	4.39
Hungary	18.4	3.29
Poland	11.4	3.85
Portugal	15.5	3.57
Romania	17.6	3.76
Slovakia	10.8	3.93
Slovenia	10.8	5.17
Spain	11.3	6.02
Sweden	4.8	5.84
UK	7.5	5.25

**Source:** European Social Survey, 3<sup>rd</sup> Round, 2006. Own calculations.

**Methodological Note 1: Estimating income per equivalent household member based on declared household income category**

The original international ESS3 dataset does not contain micro-level data on the overall income of respondents' households. Respondents were asked to rank their household into an income categories printed on the response-cards. For each country, there were 12 income categories. However, in the case of Hungary and Romania, income data was not comparable (the income-intervals were different). Therefore the original country-specific household income variables (*hinctnro* and *hinctnhu*) were added to the international dataset.

Based on the income category (ordinal variable *hinctn*), the overall income of the household was estimated at the middle of the income interval (EUROS/month). In the case of the highest income category, the average difference between categories was added to the lower limit of the interval. Unlike for the other states, in Hungary there were 13 income categories, in HUF. Averages were therefore converted in EURO. The estimated overall income of households calculated in this manner is presented in the following table:

**Table A.6: Estimating overall household income**

	Approximate MONTHLY INCOME	New value	Approximate MONTHLY INCOME	New value	Approximate MONTHLY INCOME		New value
Show card	FOR EU-15 and Bulgaria		For Romania (data in €)		For Hungary (in 1000 HUF)	1000 HUF	Euro*
J	Less than €150	€75	Less than €100	€50	Less than 37	18.5	€74
R	€150 to under €300	€225	€100 to under €200	€150	37 to under 56	46.5	€185
C	€300 to under €500	€400	€200 to under €300	€250	56 to under 75	65.5	€260
M	€500 to under €1000	€750	€300 to under €400	€350	75 to under 100	87.5	€348
F	€1000 to under €1500	€1250	€400 to under €500	€450	100 to under 125	112.5	€447
S	€1500 to under €2000	€1750	€500 to under €600	€550	125 to under 150	137.5	€546
K	€2000 to under €2500	€2250	€600 to under €700	€650	150 to under 175	162.5	€646
P	€2500 to under €3000	€2750	€700 to under €800	€750	175 to under 200	187.5	€745
D	€3000 to under €5000	€4000	€800 to under €900	€850	200 to under 225	212.5	€844
H	€5000 to under €7500	€6250	€900 to under €1000	€950	225 to under 300	262.5	€1043
U	€7500 to under €10000	€8750	€1000 to under €1100	€1050	300 to under 375	337.5	€1341
N	€10000 or more	€10500	€1100 or more	€1150	375 to under 500	437.5	€1739
	-	-	-	-	500 or more	625	€2484

Note: \*For Hungary, national currency was converted into Euro at the 01.01.07 exchange rate, 1 Euro=251.63 HUF.

In order to account for household size and structure, the OECD-2 equivalence scale was used and household income per equivalent adult was computed. This measure served as the indicator of "objective" household income: declared income per equivalent household member. The three variables (estimated income for the EU countries and Bulgaria, estimated income for Romania and Hungary) were merged into one variable. The following table presents the number of valid cases for each country (N), average estimated income per equivalent household member and standard deviations for each country.

**Table A.7: Estimated income per equivalent household member**

<b>Country</b>	<b>Mean (Euro)</b>	<b>Number of valid cases</b>	<b>Std. Deviation (Euro)</b>
Belgium	1480.7	1559	965.8
Bulgaria	120.7	1128	88.2
Cyprus	1130.8	811	687.4
Germany	1478.6	2173	1005.1
Denmark	2143.1	1327	1199.9
Spain	1124.2	1127	1032.9
Finland	1652.9	1724	989.5
France	1484.5	1740	1035.0
United Kingdom	2062.7	1858	1580.9
Hungary	303.0	1274	150.1
Poland	356.4	1390	457.1
Portugal	784.8	1212	982.5
Romania	141.8	1946	114.1
Sweden	1770.4	1781	969.1
Slovenia	700.5	1166	462.7
Slovakia	434.6	1063	484.6
Total	1138.0	23279	1125.8



**Methodological Note 2: Minority status and subjective feeling of belonging to a discriminated group: illustration for Eastern European countries**

The dataset does not allow the identification of respondents in terms of ethnicity, nevertheless, it contains information on ethnic minority status and belonging to a discriminated group in the country (subjective assessment on discrimination).

The following table presents on a country-level the frequencies of reporting belonging to discriminated groups, as well as on what grounds does discrimination occur, in the opinion of respondents.

**TABLE A.8: Percentages of respondents who considered themselves as belonging to discriminated groups**

	Bulgaria	Hungary	Poland	Romania	Slovakia
<i>Number of respondents who reported to belong to a discriminated group (%)</i>	101 (7.4%)	76 (5.0%)	85 (4.9%)	103 (4.8%)	110 (6.2%)
<i>Discriminated on grounds of... (%)</i>					
Colour or race	11.9	31.6	-	13.6	23.6
Nationality	10.9	14.5	2.4	12.6	17.3
Religion	5.0	6.6	8.2	5.8	6.4
Language	7.9	1.3	-	1.0	9.1
Ethnicity	47.5	28.9	-	17.5	22.7
Age	23.8	7.9	17.6	21.4	22.7
Gender	7.9	3.9	9.4	2.9	16.4
Sexuality	1.0	1.3	-	3.9	0.9
Disability	8.9	14.5	23.5	9.7	9.1
Other	8.9	30.3	45.9	4.9	9.1
Don't know	8.9	1.3	2.4	8.7	1.8
No answer	-	-	-	-	4.5

**Source:** ESS3 dataset. Own calculations. Multiple responses were possible (i.e. cumulative percents exceed 100%). Figures indicate relative frequencies of responses. For example, in Romania, out of the 103 persons who considered themselves to belong to discriminated groups, 13.6% declared that they are discriminated on grounds of their colour or race, 12.6% that on grounds of their nationality, etc.

Ethnic minority status was accompanied by the feeling of belonging to discriminated groups at a different rate, depending on the country of residence:

**TABLE A.9: Feelings of belonging to discriminated groups (%)**

	Bulgaria	Hungary	Poland	Romania	Slovakia
% of respondents belonging to an ethnic minority	25.9%	40.5%	13.0%	15.0%	28.8%
% of respondents belonging to the majority ethnic group in the country	4.0%	3.0%	5.0%	3.9%	4.2%

**Source:** ESS3 dataset. Own calculations. For example, in Romania, 15% of those declaring to belong to a minority ethnic group in the country declared that they also belong to a discriminated group. Out of those who belong to the ethnic majority group (Romanians), 3.9% declared that they belong to a discriminated group.

**Table A.10: Inequalities in self-assessed health by socio-economic position as reported by Mackerbach, Meerding and Kunst (2007)**

Country	Year	Odds ratios	
		Men	Women
Belgium	1997	3.22	2.36
Bulgaria	1997	2.19	2.84
Denmark	1994	2.16	3.00
Finland	1994	2.99	3.29
France (*occupation)	1991-92	2.24	No data
West Germany	1990-91	1.76	1.91
Great Britain	1996	3.88	3.92
England (*income)	1995	3.08	2.66
Italy	1994	2.94	2.55
Spain	1997	2.58	3.10
Sweden	1997	2.37	3.06

**Source:** Mackerbach, Meerding and Kunst (2007: 28). Data presented only for selected countries. The indicator of socio-economic position was education, unless otherwise stated in parentheses. Poland was omitted due to the high difference between the results of the two surveys cited by the authors.

<sup>i</sup> In the conceptual model of the relationship between health development and social and economic career developed by Mackerbach et.al. (2007) health in childhood influences educational level, which in turn affects health in early adulthood. The latter influences labor market participation and job position, which mark health status in the early middle-age. Being healthy in one's early middle age determines to a large extent personal earnings and household wealth, which will affect health in late middle-age. (see Mackerbach et.al. 2007: 80).

<sup>ii</sup> For self-reported health status, Mackerbach et.al. used mostly national survey data from 1990-97 (see Mackerbach et.al., 2007:28).

<sup>iii</sup> Even the recent report by Busse, Wörz, Foubister, Mossialos and Berman (2006) on cross-country differences in access to health care services does not include Bulgaria and Romania due to the lack of reliable data.

<sup>iv</sup> Differences between ESS 3<sup>rd</sup> Round (2006) and Eurobarometer 272e (2006) findings with respect to the self-assessed health are presented in the Annexes, Table 1. They show that such limitations do exist.

<sup>v</sup> The number of physicians per 1000 persons is used as a proxy for access to health care services by Eurostat (see *European Statistical Pocketbook*, Eurostat, 2005).

<sup>vi</sup> For a recent report on health-status and access to health care services among the members of the Roma ethnic minority see European Roma Rights Centre (2006).



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