# On data literacy in the context of rational ignorance – some evidence from the Eurobarometer survey

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# Introduction

As the amount of data we generate increases exponentially, so does the demand for the ability to analyses it. As Wolff et al. [1] describe it, ensuring that every citizen possesses the required skills to interpret data, to understand its limitations and to be able to use it is a must in this context. Schield [2] adds to this argument, as data literacy, along with information and statistical literacy are the three pillars of critical thinking. Therefore data literacy is an important factor for active political participation and appropriate reaction to propaganda and fake news, which rely mainly on emotions and subjective interpretations.

Despite the existence of various programs aiming to promote data and information literacy poll results still show a rather unsatisfying state and there is a popular explanation to that. According to rational ignorance theory, when the cost of acquiring information is greater than the benefits to be derived from the information, it is rational to be ignorant. [3] Usually this approach is used for analyzing voting behavior and the general assumption is that being informed about the political agenda for each and every candidate requires too much effort, therefore the voter will choose her candidate based on other, less time consuming criteria.

Transferred to the context of data literacy this means that if reaching some basic understanding on how data works is more costly than relying on your emotional evaluation of certain cases then the latter will always be preferred, and the task at hand is to locate those social groups for which the effort costs the most.

The aim of this paper is to pinpoint the obstacles for promotion of data literacy and to establish the socio-economic groups that are most vulnerable to emotional judgement of economic matters. To do so I will describe the ways in which data literacy works in the context of rational ignorance. Then I will compare the results of two Eurobarometer surveys on the citizen’s judgements on data related matters– the overall economic performance of the European Union, as well as the employment situation in their country. The first surveys are conducted during the economic crisis in 2009 where the general performance is bad and the second in 2018 when the economic situation has improved. The findings present several social groups that systematically seem to give incorrect assessments.

## Data literacy and its role for informed political participation

Data literacy can be broadly understood as the ability to read, understand, create and communicate data as information. [4] This definition can be applied to a wider extent in conceptualizing numeracy, the ability to understand and work with numbers. As Mérola et al. [5] state, there is a strong connection between the capabilities of individuals to evaluate numeric data presented by politicians and their willingness to support their political representatives. Their results show that individuals with low numeracy tend to support their political candidates despite the data they are presenting, and the opposite – those who have high numerical skills are able to acknowledge valid data even when it is presented by the opposition. What they add to the discussion is that currently when analyzing political preferences scholars are generally interested in the values related appeals, disregarding the numerical dimensions of political persuasion.

## Rational ignorance as an obstacle for achieving data literacy

The term rational ignorance was introduced by Anthony Downs in 1957 in his book “An Economic Theory of Democracy”. [3] He focuses on the need for informed civic decision for two cases – voting and supporting a particular policy. Dawns assumes that when the individual is involved in either of this two processes, the majority of information to which she has access is generally free and the cost can be calculated in terms of time spent for collection and evaluation. However, when it comes to numbers the situation can get even more complicated, as simply obtaining information on one specific field, like unemployment doesn’t give much. What is needed is an understanding of what unemployment rate is, how it is calculated and what are the excepted margins.

One of the outcomes of this situation has been described by Caplan [6]. What he observes is the people tend to count on more easily assimilated information which relates to and affirms their emotions. Having this in mind, a situation in which a person evaluates the world that surrounds her not based on the quantitative information which she can easily possess in the era of open access data and internet but instead she is using her personal emotions and experience is more likely to occur.

# Methods

In order to achieve high levels of data literacy one must assess the benefits of it as greater than the cost for achieving it. Furthermore those members of the society that lack basic data understanding would rely mainly on their personal experience and emotion when evaluating a situation. In order to test these two assumptions I have collected data from two Eurobarometer surveys on the evaluation of the economic situation in the European Union and the employment in the national states. The two surveys are conducted in 2009 and 2018 in order to capture periods of both economic decline and growth. This data is compared with the official data from Eurostat. The overall scores are divided into different socio-economic groups by age, education and occupational status and an additional criterion - subjective evaluation of personal well-being. I hypothesize that people from more vulnerable social groups – the unemployed and those with basic education as well as those who are generally unsatisfied with their lives tend to give negative economic valuations despite what the official data sources provide. Also I would expect that citizens of countries which are taking the bottom places in terms of economic performance in the European Union tend to give negative assessments of their countries even if the official data suggests improvements.

## Data description – Eurobarometer

The data has been gathered from Standard Eurobarometer 89 from March 2018 and Standard Eurobarometer 72 from October 2009. The reason I have chosen these two datasets is that the former has been collected in time of general economic growth and the latter after the onset of the global financial crisis. For 2018 the sample size is 27 988 people and for 2009 - 27 731 people. The questions which were extracted from there are “How would you judge the current situation of the European economy” and “How would you judge the current employment situation in your country” with the options aggregated into “Good” or “Bad” level. When both answers had even score the category was excluded from the calculation.

## Data description – Eurostat

In order to evaluate the results from the Eurobarometer survey a set of controlling variables was collected in order to be used as an objective measurement of the personal judgements of the respondents. This variables are the total unemployment rate per country for the year in which the survey took place, the GDP PPP per capita for the 28 countries in current prices in euro and the GDP growth compared with the last year.

# Results

## Evaluation of official data

In 2009 the unemployment rate in the European Union reached 9.0% and the GDP is declining by 4.3% compared to the previous year with a total value per capita of 24 500 EUR. The Baltic States are the ones with the worst economic performance by that time with negative GDP growth of more than 14% and unemployment rate in Latvia reaching 17.5%.

On the contrary, in 2017 the GDP per capita has increased to 30 000 EUR in the European Union with a growth rate of 2.4 % compared with the previous year. Estonia is the Baltic state that shows biggest improvement with 5.8% unemployment rate and GDP per capita of 18 000 EUR. Still there are some countries as Spain and Greece that still seem to struggle. Spain is keeping the same unemployment rate as in 2009 (around 17%) and in Greece it has doubled from 9.6% in 2009 to 21.5% for 2017.

## Comparing the official data with the data from the Eurobarometer survey

The first step of the analysis was to compare the evaluation of the European economy from the survey with the one from the official statistics and the preliminary expectation was that in 2009 it would receive more negative scores than in 2017. And what appeared is that in 2009 five countries have evaluated the European economy as good compared to 25 in 2018. The three countries that gave overall negative remarks are France, Italy and Spain. However, when the information is aggregated on lower level there are some inconsistencies when comparing the two periods.

When it comes to the socio-economic status of the respondents, there are only two countries that report negative change from 2009 to 2017 - Lithuania and Luxembourg. In both cases the self-employed think that the European economy is bad in 2018 and good in 2009 and the same is valid for the Lithuanian managers and students. It is also important to note that in 91% of the cases divided into socio-economic groups the results have remained the same – those who are satisfied with the European economy still are and vice versa.

What can be seen from Table 1 is that in general the negative change is the most unlikely one. In the more detailed results it can be seen that usually groups that tend to change their opinion from positive to negative are manual workers, students and seniors. Another interesting group is the one of the people that does not consider change even though such obviously has happened.

Table 1. Overall change in the judgement towards the European economy and the employment in the national state

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | European economy | Employment in national state |
| Socio - economic | Negative | 1.8% | 0.5% |
| Positive | 60% | 43% |
| No change | 31% (98% negative; 2% positive) | 56% (91% negative; 9% positive) |
| Education | Negative | 0 | 0 |
| Positive | 63% | 45% |
| No change | 34% (34% negative; 66% positive) | 55% (90% negative; 10% positive) |
| Age | Negative | 3% | 0 |
| Positive | 70% | 45% |
| No change | 28% (42% negative; 58% positive) | 55% (88% negative; 11% positive) |
| Satisfaction with life | Negative | 0 | 0 |
| Positive | 55% | 39% |
| No change | 43% (60% negative; 30% positive) | 61% (94% negative; 6% positive) |

# Conclusions

The full version of the paper shows more detailed information on the particular groups that tend to keep the same opinion despite the changes that have happened. There are some groups in the society that tend to misjudge the current economic situation. In most of the cases people that evaluate their life negatively also tend to evaluate the economy in the same way. Also students tend to give more positive remarks, which is not the case for manual workers and unemployed. In countries such as Bulgaria, Romania and Croatia, which take the last places when comparing the economic performance on European level the respondents frequently give positive assessment to the European economy despite the actual economic situation.

One possible explanation for the mismatch between actual data and subjective evaluation could be the cost of obtaining data literacy. However, in order to make more concrete conclusions further research is needed. A possible next step in this direction is the comparison of PISA math results on country level with the results from the students group in the Eurobarometer survey.

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