

FINANCIAL BEHAVIOUR OF HOUSEHOLDS IN EUROPEAN UNION COUNTRIES—SIMILARITIES AND DIFFERENCES IN THE 2004–2020 PERIOD

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Abstract

Household financial behaviour reflects preferences concerning inter-temporal choice and strongly influences the whole economy. Allocating consumption, in time, households balance their exposure to liquidity risk and modify their ability to withstand financial shocks. Consumer sentiment is the main factor summing up all the preferences that shape the decision-making processes of households.

The financial services sector has been internationalised over the past few decades, gradually leading to unification of the supply and further, to the unification of the financial behaviours of households. However, even within the EU, important differences in financial behaviour can be anticipated between consumers living in various countries.

The aim of the paper is to estimate the relationship between economic sentiment and the shaping of household saving rate and household debt-to-income ratio. The ESI (Economic Sentiment Indicator) was used as a measure of cyclical fluctuations in the economy. Another aim of the paper is to find similarities and differences of financial behaviour in the case of households in European Union countries. We find that country segments are highly interpretable. Our conclusions feature implications, both academic and managerial, and directions for future research.

The data used in analysis stem from Eurostat and the European Commission. The analyses cover only 19 of the European Union countries due to the limited availability of data for some countries. Analyses include the 2004–2020 period.

We used the following statistical methods for analysis: correlation analysis, Ward method and ANOVA.

Keywords: financial behaviour of households, economic sentiment.

JEL codes: D12, I31.

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1. Literature review

Household financial behaviour reflects preferences concerning inter-temporal choice and strongly influences the whole economy. Allocating consumption, in time, households balance their exposure to liquidity risk and modify their ability to withstand financial shocks. Nofsinger (2012) proved that household behaviours strengthen the economic cycles. During booms, the rising debt and shrinking saving rate spur economic growth. In a recession, households repay debts and increase savings, which slows down an already weak economy. The consumer sentiment can be considered as the leading factor summing up all the preferences shaping household decision-making processes, however, the results on this relation are somewhat mixed.

Consumer sentiment is based on the psychological constructs of optimism (and as a reversed construct, pessimism). Optimism denotes a positive attitude towards life, perceiving the world as a positive place, and positive expectations about the future (Scheier & Carver, 1985) following (Puri & Robinson, 2007). The economic sentiment is influenced by psychological factors and the above relationship is among the areas of growing interest for researchers. Values professed in a society were found to have a statistically significant relationship with the level of consumer confidence index in European countries (Błoński & Skikiewicz, 2013). The impact of life satisfaction on consumer confidence was positively verified by Sekizawa, Yoshitake and Goto (2016). A study conducted on a set of 16 European Union countries proved that there is a strong or even very strong, statistically significant relationship between the overall degree of life satisfaction and consumer confidence indicator. Moreover, in general, only a slightly weaker strength of the correlation was found between satisfaction of life and economic sentiment indicators, concerning savings over the next 12 months and savings, at present (Skikiewicz & Błoński, 2018).

In economics, optimism is often equalled with consumer sentiment, which is a great leading indicator concerning the condition of the overall economy (Santero & Westerlund, 1996). It is a relatively persistent attitude over time which sets it apart from temporary and fast-changing trends (Weinstein & Klein, 1996). Therefore, continuous research on consumer sentiment was started as early as the 1940s in the US and is conducted in almost all countries across the world today. The increased interest of economists in the influence of consumer sentiment on behaviours dates back to the publishing of *Psychological Economics* by Katona (1975). According to the Curtin study in 2007, consumer sentiment surveys were conducted in at least 45 countries worldwide (Curtin, 2007).

Considering financial behaviours, it must be noted that optimism is equated with overconfidence, leading to irrational decisions (Odean, 1998; Bernardo

& Welch, 2001; Malmendier & Tate, 2005; Puri & Robinson, 2007).¹ In research, it is also indicated that optimists are more willing to take risks, and more likely to underestimate risks (Gervais, Heaton & Odean, 2011; Balasuriya, Muradoglu & Ayton, 2010). There are studies, however, in which it is indicated that such a correlation is very weak (Lim, Hanna & Montalto, 2011).

The influence of consumer sentiment on saving is also ambiguous. As shown by G. Katona, optimism decreases the likelihood of saving. If people feel optimistic about the future, they feel new needs, satisfying which leads to a lower savings rate. On the other hand, a pessimistic bias makes the need for the possession of new goods lower, and the rate of savings higher (Katona, 1975).

Nonetheless, it must be noted that the latest research has led to quite contrary findings, showing quite a reverse relationship. Optimistic households are more eager to save than pessimistic ones (Rha, Montalto, & Hanna, 2006; Yuh & Hanna, 2010). The same is true about non-economic optimistic bias—persons who think they will live longer than the statistical average are more likely to save (Puri & Robinson, 2007).

Research on the correlation between consumer sentiment and saving was also carried out for Poland (Białowąs, 2013). Optimism proved to be a substantial determiner in attitudes towards saving, thus, becoming an element of the saving attitudes model. In this case, according to Gianotten and van Raaij, consumer sentiment was an aggregate of opinions and outlooks on households' financial condition and readiness to buy major durable goods.

The relation of consumer sentiment and consumption has been analysed by many researchers, among others, Carroll, Fuhrer and Wilcox (1994), Ludvigson (2004), Meïihovs and Rusakova (2005), Cotsomitis and Kwan (2006), Malgarini and Margani (2007), Çelik and Özerkek (2009), Barnes and Olivei (2013), Bruno (2014). Their results support the hypothesis that consumer confidence helps to predict spending. On the other hand, Fuhrer (1993), Fan and Wong (1998), Goh (2003), and Cotsomitis and Kwan (2006) suggest that confidence effects on consumption are weaker when predicting consumption in comparison to the other determinants.

The approach of international studies focused on countries, as basic units of analysis, has good academic tradition (Douglas & Craig, 1992; Steenkamp & Ter Hofstede, 2002). The procedure usually includes international segmentation, typically consisting of a preliminary screening of countries to identify which are, potentially, the most interesting (Kotabe & Helsen, 2001, p. 220) or the international segmentation is used for grouping the selected countries (Helsen, Jedidi, & Desarbo, 1993).

¹ In the behavioural approach, overconfidence is identified as a separate category and belongs to cognitive biases (Thaler & Shefrin, 1981).

2. Economic Sentiment Index versus household saving rate and household debt-to-income ratio in the European Union from 2004 to 2020

The data used in this paper stem from Eurostat (variables concerning financial behaviour of households) and the European Commission (Economic Sentiment Index). Among variables, concerning the financial behaviour of households the 2, considered most important and available for a relatively large set of countries, were chosen: household saving rate and household debt-to-income ratio. The above-mentioned variables were available on a yearly basis. To obtain comparable values of the Economic Sentiment Index (ESI), which is available on a monthly basis, average values of the ESI were estimated for each year. These data were used in the analysis presented in the paper.

In the 2004–2020 period, the Economic Sentiment Index assumed values between 77.8 and 111.3 points. The lowest value of this indicator was observed in 2009, while the highest, appeared just 2 years earlier, i.e. in 2007. This means that the economic situation in the European Union deteriorated deeply and rapidly in 2009 compared to earlier years. In the years 2014–2016, ESI indicated significant improvement of the economic situation, compared to previous years, and considered values within the range of 104.0 to 105.7 points.

The shaping of household saving rate within the years 2004–2020 is different than ESI (Figure 1). The highest value of the household savings rate was observed

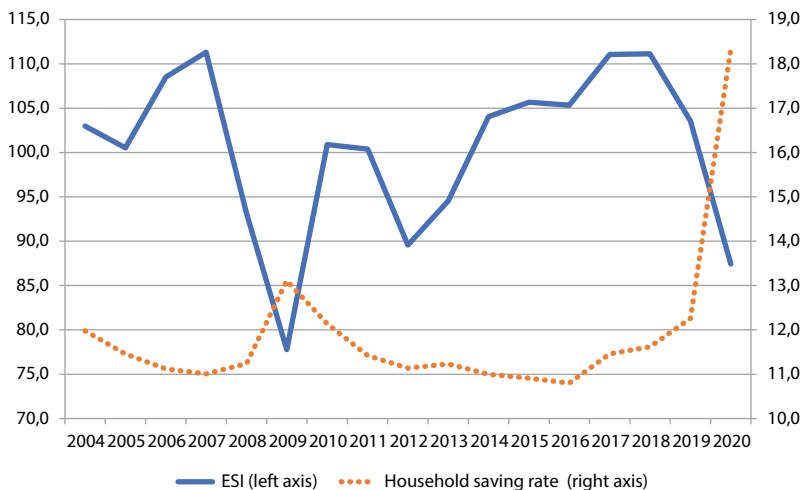


Figure 1. Economic Sentiment Index versus household saving rate between 2004–2020

Source: Own calculations based on Eurostat and European Commission data.

in 2020 and totalled 18.3. The lowest value appeared in 2016 and amounted to 10.8. Pearson's correlation coefficient between these 2 variables assumed the value of -0.498 , which means that between the Economic Sentiment Index and the household savings rate, there is a moderate negative relationship. An increase of Economic Sentiment Index leads to a decrease in the household saving rate.

Household debt-to-income ratio showed an upward trend in the years 2004–2010 and then, in following years, demonstrated a downward trend (Figure 2). The house-

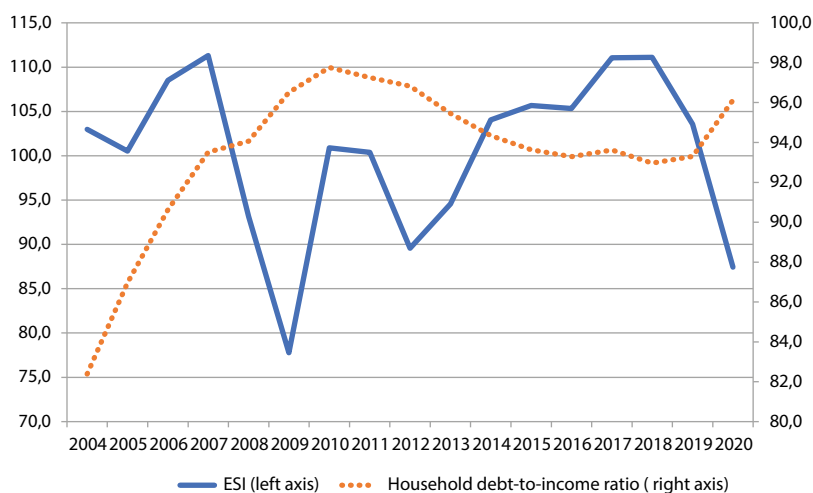


Figure 2. Economic Sentiment Index versus household debt-to-income ratio between 2004–2020

Source: Own calculations based on Eurostat and European Commission data.

hold debt-to-income ratio assumed the highest value in 2010 (97.8), just a year after the lowest value of the ESI. The lowest value of household debt-to-income ratio could be observed in 2004 and amounted to 82.4. The relationship between Economic Sentiment Index and household debt-to-income ratio is negative and weak, as indicated by the value of Pearson's correlation coefficient, equal to -0.359 .

3. Segmentation of countries

Based on the above analysis, we decided to compare financial behaviour of households in European Union countries for 2 periods of worst economic situation: 2009 and 2020, and in the period of significant improvement of economic situation: 2016. Data availability for 2009, 2016 and 2020 was reduced to 19, the number of European Union countries concerned in the analysis.

Segmentation of European Union countries was conducted on the basis of 2 variables: household saving rate and household debt-to-income ratio (see Figure 3). These variables were standardised. Euclidean distance was applied as a measure of distance between the objects. The Ward method, which belongs to the methods of cluster analysis, was used to obtain homogenous groups of countries characterised by similar household financial behaviour. This method is based on an algorithm, in which the clusters subject to the merger are selected, so that when they are combined, the smallest possible variance increment is obtained. The results of many analyses indicate the highest efficiency of Ward's method, compared to the other hierarchical cluster analysis methods in the creation of homogeneous clusters (Ferreira & Hitchcock, 2009; Ketchen & Shook, 1996). In Ward's method, the objects grouping result is a dendrogram. The groups of objects (segments) can be obtained by cutting off the longest branches of the dendrogram (so-called whiskers).

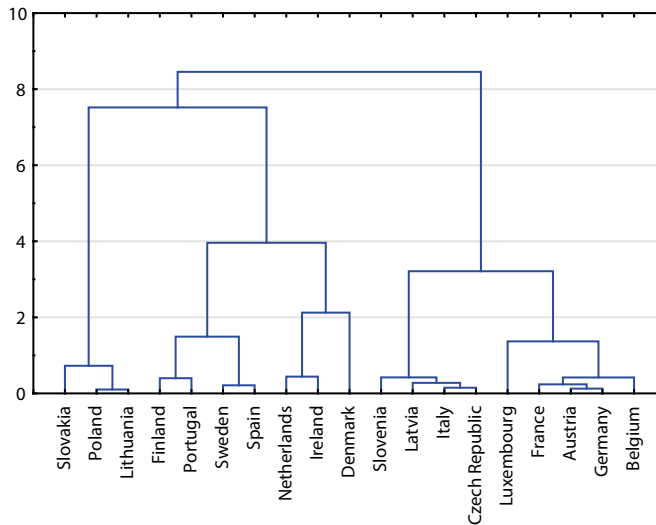


Figure 3. Dendrogram: 2009

Source: Own calculations based on Eurostat data.

For 2009, we obtained three segments of countries. The numbers of segments were given in ascending order of the average savings rate of households.

Segment 1 includes three countries: Lithuania, Poland and Slovakia. The countries in segment 1 distinguish themselves through the lowest average household savings rate (6.0) and the lowest average household debt-to-income ratio (43.4) (Table 1 and Table 2). In all the other countries (in segments 2 and 3), both indicators are, on average, at a higher level.

The highest average household debt-to-income ratio (172.0) and relatively low average household saving rate (11.9) can be observed in segment 2, which covers

Table 1. Segments of countries: 2009

Segment 1	Segment 2	Segment 3
Lithuania	Denmark	Belgium
Poland	Ireland	Czech Republic
Slovakia	Spain	Germany
	Netherlands	France
	Portugal	Italy
	Finland	Latvia
	Sweden	Luxembourg
		Austria
		Slovenia

Source: Own calculations based on Eurostat data.

Table 2. Average values of segmentation variables: 2009

Number of segments	Household saving rate	Household debt-to-income ratio
1	6.0	43.4
2	11.9	172.0
3	15.6	77.2

Source: Own calculations based on Eurostat data.

the following countries: Denmark, Ireland, Spain, the Netherlands, Portugal, Finland and Sweden.

The highest average household saving rate (15.6) and relatively low average household debt-to-income ratio (77.2) describe countries in segment 3, which are: Belgium, Czech Republic, Germany, France, Italy, Latvia, Luxembourg, Austria and Slovenia.

In order to check if there is a statistically significant difference between segments, one-way analysis of variance (ANOVA) was conducted. The results of the analysis showed that, in the case of both segmentation variables, there is a statistically significant difference between the average values of the household savings rate and the household debt-to-income ratio in the obtained segments (Table 3).

A similar analysis was conducted for all the 19 European Union countries on the basis of data for 2016 and three segments of countries were obtained, which are, to some extent, similar to segments for 2009. Some similarities and differences were found between the results for 2009 and 2016 (see Figure 4 and Tables 4–6).

Table 3. ANOVA for segmentation variables: 2009

Variables	F-test value	Statistical significance p-value
Household saving rate	23.6	0.00017
Household debt-to-income ratio	13.6	0.000348

Source: Own calculations based on Eurostat data.

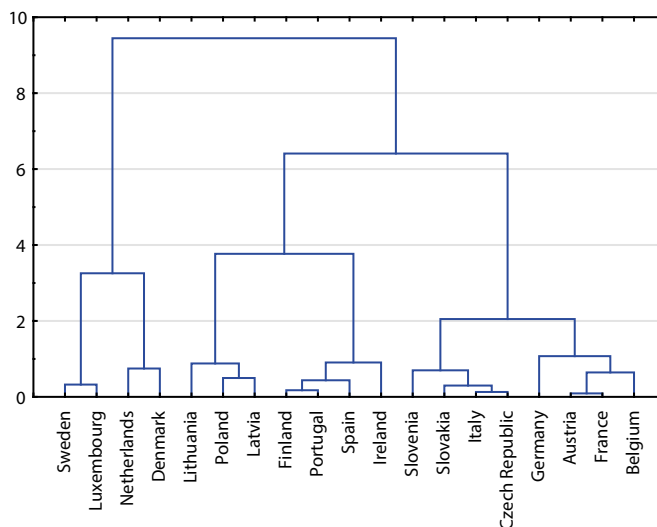


Figure 4. Dendrogram: 2016

Source: Own calculations based on Eurostat data.

Table 4. Segments of countries: 2016

Segment 1	Segment 2	Segment 3
Ireland	Denmark	Belgium
Spain	Luxembourg	Czech Republic
Latvia	Netherlands	Germany
Lithuania	Sweden	France
Poland		Italy
Portugal		Austria
Finland		Slovenia
		Slovakia

Source: Own calculations based on Eurostat data.

Table 5. Average values of segmentation variables: 2016

Number of segments	Household savings rate	Household debt-to-income ratio
1	4.7	85.9
2	15.6	194.2
3	12.4	73.5

Source: Own calculations based on Eurostat data.

Table 6. ANOVA for segmentation variables: 2016

Variables	F-test value	Statistical significance p-value
Household savings rate	19.0	0.000059
Household debt-to-income ratio	18.2	0.000075

Source: own calculations based on Eurostat data.

Segment 3, in 2016, which includes nine countries, resembles, to some extent, segment 3 in 2009, and covers seven of the same countries. In the case of the other segments, there is a more noticeable change for the number and set of countries.

Moreover, it is worth noticing that the average value of household saving rate is the lowest for the countries from segment 1, both in 2009 and 2016. The average value of the household debt-to-income ratio is the highest for the countries from segment 2, both in 2009 and 2016.

The results of ANOVA allowed to indicate that in 2016, the differences between the average values of the segmentation variables were statistically different at the following level of significance: $\alpha = 5\%$.

The results of analysis conducted for the year 2020, which is the period of the COVID-19 pandemic, characterised by economic slowdown, cause a higher extension of the results for the year 2016 than obtained for 2009. The set of countries in 2 of the 3 segments (segments 1 and 3) is almost the same, and in 1 segment (segment 2), is exactly the same as obtained for the 2016 (see Figure 5 and Tables 5–9).

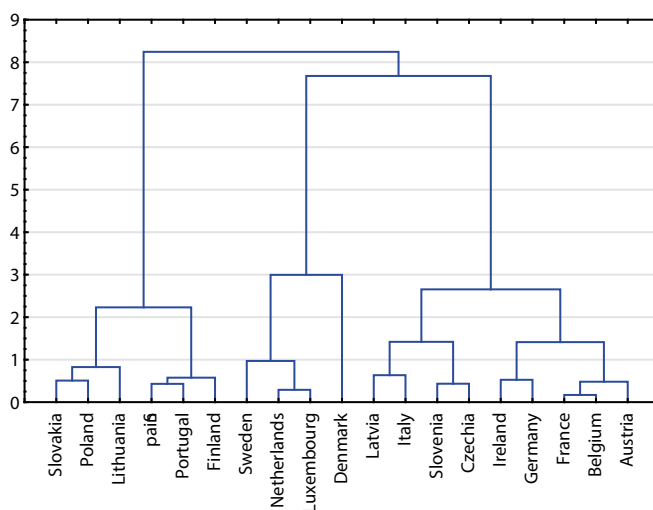


Figure 5. Dendrograph: 2020
 Source: Own calculations based on Eurostat data.

Taking the average values of segmentation variables into consideration, we can find some similarities to the results for 2009. The average value of household savings rate is the lowest for the countries in segment 1 and the highest for the countries in segment 3 (the same as in 2009). Also, the average value of household debt-to-income ratio is the highest for the countries from segment 2 (the same as in 2009).

Table 7. Segments of countries: 2020

Segment 1	Segment 2	Segment 3
Finland	Denmark	Austria
Lithuania	Luxembourg	Belgium
Poland	Netherlands	Czech Republic
Portugal	Sweden	France
Slovakia		Germany
Spain		Ireland
		Italy
		Latvia
		Slovenia

Source: Own calculations based on Eurostat data.

Table 8. Average values of segmentation variables: 2020

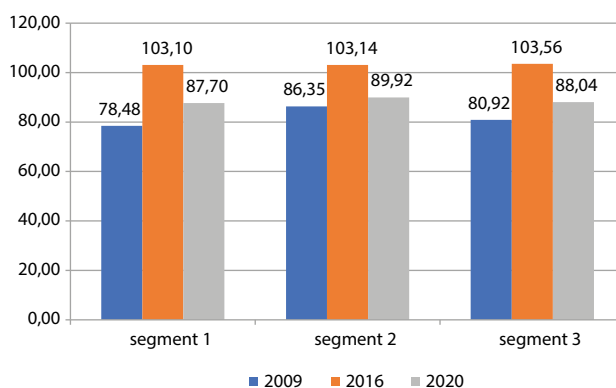
Number of segments	Household savings rate	Household debt-to-income ratio
1	12.1	78.8
2	19.6	188.3
3	20.8	76.1

Source: Own calculations based on Eurostat data.

Table 9. ANOVA for segmentation variables: 2020

Variables	F-test value	Statistical significance p-value
Household savings rate	13.4	0.000387
Household debt-to-income ratio	26.4	0.000009

Source: Own calculations based on Eurostat data.

**Figure 6. Average values of Economic Sentiment Index in segments for 2009, 2016 and 2020**

Source: Own calculations based on Eurostat and European Commission data.

ANOVA enables the conclusion (the same as for the previous periods) that the differences between average values of both segmentation variables are statistically different at the following level of significance: $\alpha = 5\%$ (Table 9).

For all 3 periods (2009, 2016 and 2020), the lowest average values for the Economic Sentiment Index were obtained in segment 1, gathering the countries with the lowest household saving rate and the lowest (in 2009) or relatively low (in 2016 and 2020) household debt-to-income ratio.

The highest average values of Economic Sentiment Index for the years 2009 and 2020 were obtained in segment 2, which can be characterised by the highest household debt-to-income ratio and relatively high household savings rate (see Figure 6).

Conclusions

The financial behaviour of households changes with cyclical fluctuations in economic situation. Analyses conducted in the paper proved that there is a significant relationship between Economic Sentiment Index and variables describing the financial behaviour of households, such as household saving rate and household debt-to-income ratio.

Both abovementioned variables describing the financial behaviour of households were used as segmentation variables to obtain homogenous groups of countries in the years of the worst economic situation (2009 and 2020), and the year of analysis with a much better economic situation (2016). The segments of countries obtained for all the periods analysed were, to some extent, similar.

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