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THE PHENOMENON OF FINANCIALIZATION IN INTERNATIONAL COMPARISONS

The article presents the results of empirical research on comparisons of the phenomenon of financialization internationally. The research aims to find out whether financialization is a universal phenomenon and looks similar in different European countries, and if not, whether it is possible to speak then about groups of countries where financialization is similar to each other. The extent of financialization was calculated based on 6 measures of financialization, selected based on an analysis of the literature on the subject. When comparing financialization in different countries, reference was made to median financialization indices, and correspondence analysis (CA) was used to find groups of countries with similar sizes of financialization. The study used data from Eurostat and OECD databases, and calculations were made using the R software package and an Excel spreadsheet.

Keywords: financialization, measurement of financialization, economic change, financialization degree.

1. INTRODUCTION

The term financialization refers to the growing role of financial motives, markets, actors and institutions in transactions taking place in the national and international economy (Epstein, 2005). This is the classic, often-quoted, definition of financialization, although not the only one. The phenomenon itself is complex and multifaceted, hence one can come to understand it in a variety of ways.

Financialization has become a reality and is often cited as one of several major trends existing in the modern economy, alongside such trends as globalization, liberalization, deregulation, etc. The effects of financialization are enormous and affect virtually every area of the economy's functioning (Sawyer, 2017). Understanding this phenomenon is necessary to be able to control it. This is because it has both favorable and unfavorable effects (Ratajczak, 2017).

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This article presents the results of a study comparing the phenomenon of financialization internationally. The scope of the research makes it possible to check whether the phenomenon of financialization is universal internationally or not. The objectives accompanying the research are two:

1) Assessing the extent of financialization in all countries studied;

2) Assessing the extent of financialization in groups of countries.

Such a goal is accompanied by two research hypotheses:

H1) The extent of financialization in all countries studied is uneven (achievement of objective one);

H2) There are groups of countries where the magnitude of financialization is similar to each other (realization of objective two).

The study covered 20 European countries, these are: Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom. Countries for analysis were selected due to the availability of empirical data, but also to make them diverse in terms of their national income. The group of countries studied included both the countries of Central and Eastern Europe, including Poland, which are probably only at the beginning of the process of intensive financialization, and the countries of the so-called Euro-12 group, i.e. rich European countries with mature financial markets, where the process of financialization has been evident for a long time. Covering such a large number of countries in the study is a new approach to the subject, as few studies published to date address such a large group of countries. The exceptions are the studies by Karwowski et al. (2019), Maxfield et al. (2017).

Figures found in Eurostat and OECD databases were used for the study. Both databases were treated as complementary databases. Only by combining the information contained in these databases was it possible to obtain the necessary set of data to realize the purpose of the study and to have a sufficiently long time series. The use of data contained in international databases made it possible to obtain comparable information. The study used as long a time series as access to the necessary data and the ability to compare them allowed. Some of the historical data available only for certain variables were dropped, making sure that the time series used were of the same length. In the end, data from the period 2007-2017 were taken into account. For the period 2007–2017, 6 different measures of the size of financialization were calculated for each of the 20 countries included in the study. A total of 132 measures relating to the size of financialization were obtained. For the resulting time series, 5 descriptive statistics were determined for each country and each type of measure, thus obtaining another 600 values. On such a set of numbers created in this way, all subsequent calculations were carried out and data summaries were created. All calculations were made using the R program package and an Excel spreadsheet.

2. MEASURING FINANCIALIZATION

Assessing the extent of financialization requires the adoption of a way to measure its magnitude. Just as there is no single, universally accepted definition of financialization, there is no single, universal way to measure it. On the basis of a critical analysis of the literature on the subject, the study adopts 6 measures of financialization that illustrate the phenomenon in different aspects. Two of them relate to the financial sector, two to non-financial enterprises, and two to households. The measures were selected to reflect the outcome of the financial sector's activities and the involvement of non-financial enterprises

and households in the financial markets, as well as debt in the financial sector, non-financial enterprises and households (Gemzik-Salwach, 2023). These are summarized and presented in Table 1.

Table 1. Accepted measures of financialization with their reference to the literature on the subject

Measures of financialization	Authors who recommended a particular indicator or an indicator with a similar design
Value added created by finance and insurance sector, % of value added	Assa (2012); Arcand et al. (2012); Barradas et al. (2018); Beck, Levine (2004); Golębiowski, Szczepankowski (2015); Karwowski et al. (2016); Kedrosky, Stangler (2011); Palley (2007); Svilokos, Burin (2017).
Financial sector leverage (debt to equity, %)	Karwowski et al. (2016); King, Levine (1993); Palley (2007).
Financial assets of non-financial companies, % of GDP	Batt, Applebaum (2013); Golębiowski, Szczepankowski (2015); Kalogerakos (2013); Karwowski et al. (2016); Krippner (2005); Krippner (2012); Stockhammer (2010); Tori, Onaran (2017).
Debt of non-financial enterprises in relation to total surplus	Arcand et al. (2012); Barajas et al. (2013); Barradas et al. (2018); Cecchetti, Kharroubi (2012); Dabla-Norris, Srivisal (2013); Easterly et al. (2000); Gołębiowski, Szczepankowski (2015); Grabowski, Maciejczyk-Bujnowicz (2016); Jordà et al. (2014); Karwowski et al. (2016); Levine (2005); Loayza, Rancière (2006); Rajan, Zingales (1998); Rioja, Valev (2004); Rousseau, Watchel (2011); Stockhammer (2010).
Household financial transactions, % of net disposable income	Dünhaupt (2014), Epstein (2005); Fierla (2017); Karwowski et al. (2016).
Household debt as a % of net disposable income	Arcand et al. (2012); Barajas et al. (2013); Barradas et al. (2018); Bernanke, Gertler (1996); Cecchetti, Kharroubi (2012); Dabla-Norris, Srivisal (2013); Easterly et al. (2000); Grabowski, Maciejczyk-Bujnowicz (2016); Jordà et al. (2014); Karwowski et al. (2016); Karwowski, Stockhammer (2017); Kim (2013); Levine (2005); Loayza, Rancière (2006); Minsky (1982); Minsky (1996); Minsky, Whalen (1996); Palley (2007); Philippon, Reshef (2012); Rajan, Zingales (1998); Rioja, Valev (2004); Rousseau, Watchel (2011); Saci et al. (2009); Stockhammer (2010); Whalen (2011); Wrzesinski (2014).

Source: own compilation based on: (Gemzik-Salwach, 2023).

3. FINANCIALIZATION IN ALL COUNTRIES SURVEYED

The first step in analyzing the magnitude of financialization was to calculate descriptive statistics for all financialization measures selected for the study by country. Table 2 summarizes the medians for the financialization measures by country.

Table 2. Median for financialization measures by country

Country/ Measure of Financialization	Value added created by finance and insurance sector, % of value added	Financial sector leverage	Financial assets of non-financial companies, % of GDP	Debt of non-financial enterprises in relation to total surplus	Household financial transactions, % of net disposable income	Household debt as a % of net disposable income
Belgium	6,13	194,50	222,30	5,80	4,32	105,00
Czech Republic	4,31	567,40	46,00	2,11	3,65	65,70
Dishes	5,95	204,70	169,90	6,02	0,70	314,20
Estonia	3,88	370,80	83,70	3,26	6,35	85,20
France	4,23	358,10	121,60	6,27	4,99	111,20
Greece	4,60	1047,20	39,80	4,16	-2,80	111,30
Spain	4,16	572,60	86,20	5,22	4,55	141,50
Lithuania	2,19	608,20	38,10	1,65	2,51	47,70
Luxembourg	26,83	56,80	621,00	19,24	9,43	165,60
Latvia	4,16	684,20	42,90	3,71	0,14	71,40
Netherlands	8,46	145,30	247,40	6,62	5,25	266,40
Germany	4,19	515,80	97,00	2,91	8,89	95,20
Poland	4,26	301,20	39,40	2,54	5,10	60,10
Portugal	6,29	364,30	97,50	7,64	3,49	150,80
Slovakia	4,01	841,50	86,10	3,22	-0,04	55,30
Slovenia	4,32	594,00	51,60	5,42	1,85	56,90
Sweden	4,31	219,00	138,70	5,91	7,00	168,30
Hungary	4,38	120,60	70,80	3,64	9,38	63,20
United Kingdom	7,81	885,60	101,40	6,77	4,49	148,90
Italy	5,38	758,80	61,50	4,95	2,09	87,20

Source: own elaboration.

An analysis of the median value achieved by each measure of financialization shows that there are large differences between the values of this measure for individual countries. This confirms hypothesis one, which states that the size of financialization in the group of all countries studied is unequal. The median spreads across countries for each measure of financialization are:

- From 2.2 to 26.8 – for the financialization measure, the value added created by the finance and insurance sectors expressed as a percentage of value added,
- From 56.8 to 1047.2 – for the measure of financialization leverage of the financial sector,
- From 38.1 to 621.0 – for the measure of financialization, the financial assets of non-financial enterprises as a percentage of GDP,
- From 1.7 to 19.2 – for the measure of financialization, the debt of non-financial enterprises in relation to the total surplus,
- From -2.8 to 9.4 – for the financialization measure, household financial transactions expressed as a percentage of net disposable income,

- From 47.7 to 314.2 – for the financialization measure, household debt as a percentage of net disposable income.

Such heterogeneity of financial processes taking place in different countries was emphasized in works by Becker et al. (2010), Zhang (2009), among others. In the study conducted for financialization as measured by the following measures: non-financial corporate debt to total surplus, financial sector leverage and household debt as a percentage of net disposable income, the greatest variation occurring across countries was noted. The countries where the size of financialization differs the most are Luxembourg and Greece.

An analysis of the size of financialization by country showed that the group of countries studied is not homogeneous in terms of the size of financialization. Moreover, this statement is true for all the financialization measures selected for the study, since for none of the financialization measures did the obtained research results turn out to be close enough to each other to recognize the homogeneity of the group. Therefore, we proceeded to analyze the size of financialization in groups of countries.

4. FINANCIALIZATION IN GROUPS OF COUNTRIES

Analysis of the types of financialization in each country makes it possible to assign a country to a particular measure of financialization. In other words, thanks to it, it is possible to determine the measure of financialization (one of the six selected for the study), the size of which is dominant in a given country. Such knowledge makes it possible to determine which type of financialization, is dominant in a country and in which sector of the economy it manifests itself most strongly. The analysis is designed to answer the question of which of the six measures of financialization was the dominant size in each of the countries studied.

The study was conducted using the method of corespondence analysis (CA), which is equivalent to principal component analysis (PCA). The difference between these methods is, among other things, that the correspondence analysis method can be applied to variables that are not presented on a quotient scale. This is an alternative method to principal component analysis, which is less accurate, but also shows the relationships that occur. Both methods show relationships between variables. The algorithm used in the correspondence analysis method groups correlations by themselves, that is, it checks whether an increase in one variable is accompanied by an increase in another variable, and a decrease is accompanied by a decrease. Thus, the correlations highlighted refer to dynamics rather than to existing structures. The purpose of correspondence analysis is to graphically illustrate the relationships that exist between variables in a space with fewer dimensions while retaining as much original information as possible (Greenacre, 2007; Misztal, 2015). The method creates artificial variables, called dimensions, to which other variables are assigned – in the case of this analysis, these are the financialization measures, six in number. Thus, in place of the six measures of financialization, a smaller number of artificial variables, called dimensions, are created, which do not mean anything in themselves, but instead represent the relationships that exist between the measures of financialization, that is, they show which of the six measures of financialization are grouped together. The basis for the grouping here are the eigenvectors, the results of which are shown in Table 3.

Table 3. Median for financialization measures by country

	Eigenvector	Variance	Cumulative variance
Dimension1	0,2846312663	85,19429947	85,19430
Dimension 2	0,0436952460	13,07862598	98,27293
Dimension 3	0,0048373793	1,447898350	99,72082
Dimension 4	0,0007093097	0,212306770	99,93313
Dimension 5	0,0002234085	0,066869430	100,00000

Source: own elaboration

Table 3 shows the relationships that exist between the variables. It shows that 5 dimensions of financialization were created, nevertheless 98.27% of the cumulative variance was already attributed to the second dimension. This means that if two artificial variables, called dimensions, had been created, 98.27% of the results, i.e. practically the entire set, could have already been attached to them. This is good information because it means that a six-element set of financialization measures can be reduced to a two-element set. This relationship is confirmed in Figure 1, which shows the so-called elbow graph, also known as a settlement graph.

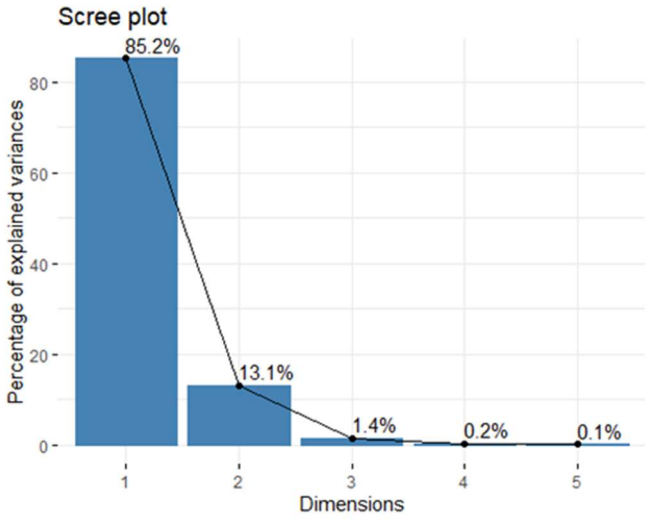

Figure 1. Elbow diagram for vectors

Source: own elaboration.

In Figure 1, you can see the breakdown of the line already after the first dimension, this means that the number of n + 1 dimensions should be used for the analysis, where n is the number of the dimension after which the breakdown occurred. Thus, in the case under analysis, the number of dimensions will be 2, which corresponds to the calculations shown in Table 3 – the variance for the first dimension marked in Figure 1 was 85.2, and for the second dimension - 13.1%. Together, this represents 98% of the cumulative variance value, which corresponds to the number of cumulative variance assigned to dimension 2 in Table 3.

The study of the size of financialization in each country using the correspondence analysis method also made it possible to determine which country is dominated by which type of financialization. A graphical representation of these relationships is shown in Figure 2, with the financialization measures numbered from 1 to 6 (*Measure 1, Measure 2, Measure 3, ..., Measure 6*) used in the description of previous studies being replaced for the figure by the terms financialization sizes, also numbered from 1 to 6, with corresponding numbering (*Size 1, Size 2, Size 3, .., .Size 6*).

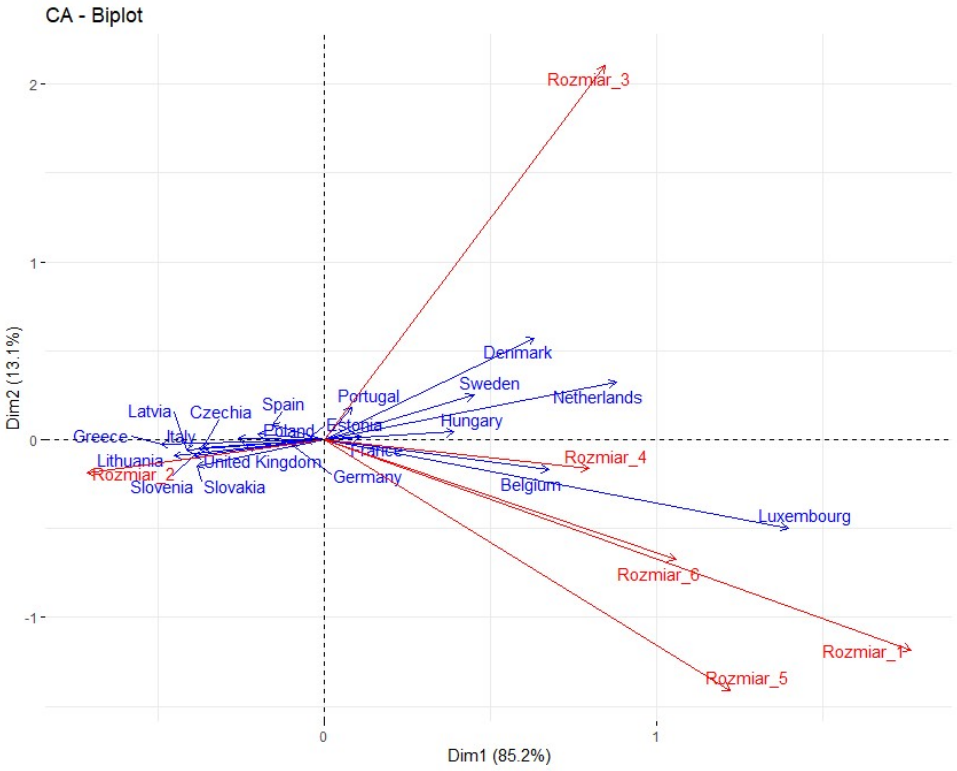

Figure 2. Dominant types of financialization by country

Source: own elaboration.

The survey made it possible to determine which countries have higher numbers in the size of financialization defined by the selected measures, and which countries most closely match these higher values of the measures, and therefore which type of financialization dominates in a given country. Based on an analysis of the information presented in Figure 3, it can be concluded that some countries are dominated by one specific type of financialization, e.g. financialization measured by size 1, a measure – value added created by the finance and insurance sector, expressed as a percentage of value added for each country – is the type of financialization most characteristic of Luxembourg. Luxembourg has been placed some distance from other countries on the chart, suggesting that financialization will proceed differently here than elsewhere. In contrast, there is a whole group of countries (the Czech Republic, Greece, Italy, Latvia, Lithuania, Poland, Slovakia,

Slovenia, the United Kingdom) where the same type of financialization, as measured by measure 2, financial sector leverage, is dominant. This analysis seems to confirm the thesis of the existence of groups of countries with similar size and type of financialization and prompts us to look for them.

Another important piece *of* information is that the square *of* independence between the two variables (*chi-square of independence*) was 4857.741, that is *p-value* = 0. This means that there are structures, and therefore groups of countries similar in terms of financialization can be distinguished. A *p-value* close to 0 means that the analysis is highly statistically significant.

5. CONCLUSION

This article accomplishes two goals, namely, assessing the size of financialization in all the studied countries and their groups, and verifying two hypotheses, namely, that the size of financialization in all the studied countries is unequal, and that there are groups of countries in which the size of financialization is similar to each other.

It is clear from the research that financialization is not a simple process that takes place uniformly in all countries and all sectors of the economy. The extent of financialization varies from country to country and from sector to sector. Financialization should therefore be understood as a differentiated process, both in terms of economies and sectors.

The analyses confirmed the veracity of hypothesis one, which states that the magnitude of financialization in the group of all countries studied is uneven. Sectoral processes can work in opposite directions, but will always have an impact on the economy as a whole. For example, the financialization of non-financial companies manifested in the placement of their cash holdings in financial assets instead of tangible investment will mean precisely a decline in investment and thus inhibit global demand. At the same time, rising household indebtedness will certainly translate into an increase in consumer demand and thus stimulate global demand growth. The overall macroeconomic outcome thus depends on sectoral interactions.

The existence of similarities concerning the size of financialization in groups of countries was found, which confirmed the validity of hypothesis two. It should be noted that the existing similarities in the size of financialization across groups may indicate that there is still a lack of macroeconomic theories to explain and understand financialization according to the experience and development path of each country. The presented research results showing the size of financialization in each group of countries can support research on financialization in this area.

All authors have read and agreed to the published version of the manuscript.

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