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The impact of the financial sector on economic growth

Introduction

The newest theories presume that the path of balanced economic growth is determined by the cooperation of the state authorities, enterprises and households. The short and long-term speed of global production growth is systemically linked to the amount and quality of assets and the effectivity of connecting them. An efficient financial system, providing cash flow and simultaneously being a control tool of effective property use, is of vital importance in the circular movement of incomes and expenditures in a state. The system consists of financial institutions (such as banks, funds, brokers' offices) which, administrating huge funds and financial instruments, operate with them on all the markets according to the rules and regulations of a given country, being subject to greater liberalization. Nowadays such a phenomenon is known as financialization, meaning that there is a dominant role of the financial sector over the real sector. This is also favoured by increasing the supply of the US dollar and Euro as in instrument of stimulation for economic prosperity and anti-crisis activities. Equally, financialisation and the growing money supply disturb the natural economic equilibrium processes regulated by financial institutions, access to money leads to the instability of all the markets. The above observed processes change the thus indicated role of the financial sector in the economy, making it the main factor of economic growth.

The aim of this article is to analyse the impact of the financial sector on economic growth in the context of the increasing importance of the financialization phenomenon, which was one of the core reasons of the financial crisis. The author's consideration goes outside the meaning of the financial sector in the main economic trends as well as bringing the modelling basics within economic growth based on

the financial market. Next, they define the financialization process by analysing its influences on the real economy. In the last part of the article the aforementioned process is viewed as a disturbance factor in the macroeconomic balance and is studied using the econometric methods in order to obtain the answers as to what degree does the financialization phenomenon play a role in economic growth?

1. The financial sector from the perspective of the main economic trends

Modern science notes the importance of the financial sector in economic growth, claiming that a developed financial system plays a crucial role in the effective allocation of resources and is positively correlated with economic growth (King, 1993). The current discussion more frequently concerns the scale of this impact and its channels. The genesis of this discourse has a wider ground.

The division of the economy in the real economy and the monetary sphere functions in economics. Commercial banks as enterprises belong to the first one. The central bank is the most important institution regulating the monetary policy. It needs to be remembered that the behaviour of commercial banks and other entities of the real economy depends on the decisions of the central bank which regulates the level of interest rates and the compulsory reserves, as well as the trade of the State Treasury securities. The representatives of the neoclassical school recognized the neutrality of money and the canon of this trend was the dichotomy of the real and monetary spheres. Neo-classicists also thought that in the long term, monetary impulses do not have any impact on production and employment. The market mechanism with flexible prices ensures a return to the state of balance. Until the outbreak of the great world crisis in 1929, the neoclassical ideas were almost unquestioned in academic circles.

After the great depression of the 1920s, the alternative theory of Keynes gained recognition. As opposed to the neo-classicists, he paid attention to the concept of the short term in which prices and salaries are rigid. He also noted that the customization of prices, with full employment, may recede the economy from the state of balance through reducing global demand (Bator-Kędra, 2005).

Modern followers of the neoclassical school accept the short-term impact, but they do not approve of the medium and long-term effects. They do not reach a common ground even on this issue, so the dispute moves on to a discourse on the role of the financial sector in economic growth, because these are banks which, with the central bank at the lead, shape the supply of money in the economy. Among the well-known economists from those times who did not ignore the role of the financial sector in their considerations of economic growth, the following names need to be mentioned: Bagehot, Schumpeter, Goldsmith, McKinnon, Gurley and Shaw (Levine, 2004). Nowadays, Miller claims that the impact of

the financial sector on economic growth is so obvious that it should not even be discussed. As an example of different viewpoints, Robinson may be considered, who claims that where a business is run, the financial sector follows. The activity and development of the financial system is a derivative of economic growth, not the other way round. Banks do not stop giving loans in any period of an economic situation. This time of recession and crisis is currently an impulse to increase the supply of money by central banks and even an opportunity to increase incomes by the entire financial sector.

The approach of the unilateral impact of the financial sector on economic growth was invalidated by the last financial crisis which very quickly changed into a global economic crisis. These events recalled the great crisis from the 1930s and its similar basis.

Since the 1980s we may observe different analytical approaches to the examination of the impact of the financial sector on economic growth.

One of the most active economists studying this impact is Levine. In his dissertation, *Finance and Growth: Theory and Evidence*, he enumerates five categories of the impact of the financial system on economic growth (Levine, 2004):

– providing ex ante funds and information about the investing possibilities;
– monitoring of the investments (after finalization);
– diversification and risk management;
– mobilization and operating on savings;
– helping in exchanging goods and services.

The enumerated functions are important for the economy and its development, however nowadays the excessive supply of money not based on any parity, monetary wars for competitiveness of economies, and the race for profit, have an influence on the reduction of their impact on economic growth.

In the considerations about the importance of the financial sector on economic growth, the studies of such scholars as Modigliani (1970, 1983, 1993) as well as Carroll and Weil (1993) need to be considered. They presented a different approach to this matter and provided an empirical attempt to prove the positive dependence between the income growth rate (and productivity) and the savings rate of households, the private sector and the general savings rate. Other modern empirical studies (Edwards, 1996; Masson, Bayoumi, Samiei, 1995; Schmidt-Hebbel, Webb, Corsetti, 1992; Kessler, Perelman, Pestieau, 1993), mainly relate to private savings, also showing the impact of the speed of the income growth and the societies' savings rates (Liberda, Tokarski, 1999).

2. Financialization – phenomenon or new reality?

In consideration of the role of the financial sector in the real economy, the process of financialization cannot be dismissed. It is defined as the process of the autonomization of the financial sphere with the real one through increasing

the influence of the financial markets and the elites on the economic policy and the effects of managing. It adds to the changes in the sphere of management and ownership of the production factors, and through those, movements in the sources of income in the modern economy for the financial sector. Financialization is the result of some historical processes of an objective character, and its intensification since the dawn of time has been inscribed in the history of humanity connected with a unique economic and social innovation, which is money (Ratajczak, 2014). Financialization, including the growing domination of financial markets and the entities functioning there, results in structural changes of economies, enterprises (also financial institutions), countries and households (Aalbers, 2015).

The process of financialization in the literature is treated as a consequence of the globalization and liberalization of certain markets and whole economies, progressing gradually since the 1980s (Aalbers, 2015; Gkanoutas-Leventis, Nesvetailova, 2015). An effect of the globalizing processes and economic integration is, among others, the increase of trade and the free movement of capital. It favours the development and liberalization of financial markets in every part of the world. As Dore noted, financialization is the domination of the financial sector in the field of the economy together with its impact tools on the real economy and the impact of its markets on the business cycle determinants (Dore, 2002 after: Żyżyński, 2010).

Marszałek (2012) enumerates more detailed aspects of the impact of the financial sector on the real economy and the economic situation, talking about the creation of a specific financial culture and the common and growing presence of financial institutions, markets, instruments and schemes in economic and social life, together with the growth of consumption supported by loans.

The impact of the financial sector on the real economy is a common phenomenon nowadays, definitely going beyond the activities of monetary policy instruments on the economy. Creating money by central banks and on a massive scale by commercial banks and financial institutions serves not to stimulate the real economy and stabilize it, but to increase its debt and destabilize.

Such an impact of money and financial institutions requires a new model of economic growth and mechanisms protecting against financial crises.

The globalization process, especially free flowing capital, can be used as a route to wealth, however a value-deprived world can lead to unprecedented global financial and economic crises. The effect of developing wealth through the use of the financial sector amongst others, on the one hand is the improved standard of living of many societies and national wealth, on the other hand however it is the increasing societal inequalities and the harm ti citizens caused by the effect of the growing strength of the financial institutions (Włodarczyk, 2014).

3. Economic growth models based on the financial market

The American economist Levine enumerates the main ways of studying the impact of the financial sector on economic growth: simple 'cross-country' analysis, 'cross-country' analysis with the use of instrumental variables, dynamic models with the use of panel data, models built on the basis of the analysis of time series with the use of the Granger causality test and VAR.

Simple 'cross-country' analysis is based on a data set from approximately ten countries and the use of economic growth indicators as well as the development of the financial sector to build a model, usually on the basis of a relatively simple regression equation. A study by Goldsmith from 1969 may be given as an example: *Financial Structure and Development* (Goldsmith, 1969).

The method of instrumental variables may be used in evaluating the parameters of the linear econometric model with random explanatory variables. Then, instrumental variables strongly correlated with target explanatory variables are searched for (Nowak, 2006). Such a practice is worth using if the development of the financial sector depends on economic growth, but it is not known if progress in the field of finance only outruns the growth and anticipates the economic situation, or if it really is a factor of action: for example an instrumental variable defining the type (origin) of financial law. Such a variable is correlated with the efficiency and development of the financial sector, but the law itself does not result from any actual economic growth. Such an indicator is presented by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) in Law and Finance.

Dynamic models with the use of panel data allow variance analysis on the level of time and place. Moreover, to the regression equation a variable explaining the effect of time and country specifics may be introduced. Generally, the Generalized Method of Moments (GMM) procedure is used, which is an expansion of the classical method of moments on the basis of the law of great numbers assumption. Thanks to the moments from the sample (the data we administer) we may estimate the theoretical moments. An example is the dissertation, *Financial Intermediation and Growth: Causality and Causes* (Beck, Levine, Loayza, 2000).

With the Granger causality test it can be checked if the data from the time series may be useful to foresee the explained variable. The dependence of the variable explanatory values from earlier periods with the variable explained value is studied. VAR, on the other hand, belongs to multi-equation models of stochastic processes. Its essence is to capture the evolution and interdependence of events, wherein all the variables are treated equally (without dividing them into explained and explanatory).

Levine also points out that the studies may take the form of a case study, which is an analysis of one country. In the studies conducted in Germany, Koetter and Wedow (2010) compared the quality and quantity parameters of the financial sector in the shaping of economic growth. Moreover, the issue of the impact of financial growth on economic growth may be studied directly on the industrial level (e.g. Rajan, Zingales, 1998) or the business sector level (e.g. Demirguc-Kunt and Maksimovic, 1998).

The level in which banks strengthen and loosen their policy makes it possible to foresee both the future supply of loans and the economic condition (Lown, Morgan, 2006). Strengthening and loosening results from anticipating the changing economic situation. However, the majority of enterprise investments are funded by loans. Household expenditures which propel the economy are also mainly possible thanks to loans, then we can look for the impact of loans on economic growth. Bidirectional influence poses an essential problem in the studies on the dependence of economic growth and the state of the financial sector – including the supply of loans.

The Granger causality test (Wald variant) for the United States did not allow the rejection of the zero hypothesis, which assumed the lack of the loans' impact (from earlier periods) on the increase of GDP. What is more, the value of ρ was high and far from acceptable (a low rho would indicate a small probability of the hypothesis rejection error). The aim of the studies were loan and economic growth indicators (both in the real approach, loans related to the entire GDP in the given period) in the years 1966–2007. Certain types of loans were isolated: Secured By Real Estate, To Depository Institutions, Agricultural Production, Commercial and Industrial, States and Political Subdivisions, All Brother Loans, Leasing and Financing Receivables also did not allow the rejection of the analogical hypotheses. The test indicated rather the influence of economic growth on the supply of loans (Ivie, 2008). A similar result with the use of the Granger causality test was obtained for the countries of the Eurozone. The studies were conducted on the basis of data from the 1st quarter of 1980 and the 3rd quarter of 2001. The initial equation took the (semi) logarithmic-linear form (Calza, Manrique, 2006):

$$(\text{Loans} - p)_t = \beta_0 + \beta_1 y_t + \beta_2 R_t + \beta_3 \pi_t,$$

where:
p – deflator,
y_t – real GDP,
R_t – loans interest rate,
π_t – inflation.

The variables assumed were: the real value of loans for the private sector, real GDP, loans interest rates and the inflation rate (annualized). It turned out that

loans were highly dependent on all the other variables, wherein for real GDP only the values of interest rates allowed a better forecast of future values. An opposite dependence was also noted, but of a low value. Inflation, on the other hand, was determined by all the other variables in a similar way to loans (Calza, Manrique, 2006). Using similar variables for the United States and VAR modelling, the results were similar to what has already been mentioned above (Lown, Morgan, 2002).

However, there are many test results and premises for accepting the opposite situation, i.e. the positive role of loans in economic development. Levine, Loyaza and Beck used the GMM procedures (Generalized Moment Method) in order to determine the impact of the financial sector on economic growth. A total of 71 countries took part in the studies for the years 1960–1995. The economic growth stimulated by the loans for the private sector led to an increase of the economic productivity coefficient. It depreciated the role of savings and the accumulation of funds. In a neoclassical equation of global production, it is represented as A (Total Factor Productivity):

$$Y = A \times K^{\alpha} \times L^{1-\alpha},$$

where:
Y – production,
A – main productivity coefficient,
K – funds,
L – human resources,
α – coefficient.

The study was certain to reduce the likelihood of making an error connected with not considering other variables, not considering the simultaneity of events or not considering the cause-and-effect relationship (Levine, Loayza, Beck, 2000). McCaig and Stengos, used the same sample of countries, the same time period and the GMM procedure, and they confirmed the importance of loans for the private sector. At the same time, they enriched the model with other sociocultural factors for given countries (McCaig, Stegos, 2005).

Loan availability as a factor influencing the productivity coefficient (separately for individual companies, not the whole economy) was also proven by Gatti and Love using the example of enterprises from Bulgaria.

Also a study carried out by King and Levine from 1993 refers to enterprises. They introduced the parameters of PRIVATE and PRIVY, which are, respectively, the participation of loans in the non-financial sector (enterprises) in relation to loans in general and the relation of these loans to GDP. They also turned out to be significantly correlated with economic growth (King, Levine, 1993).

The examples presented above indicate that the impact of loans and thus the financial sector on economic growth is not unequivocal. In specifying economic

growth as a function dependent on the supply of loans, one may not expect a linear relationship.

The lack of access to loans will significantly limit the growth potential. On the other hand, excessive credit granting may turn into an economic crisis. The structure of loan supplies both for enterprises (for investment, for turnover) and households (for investments, for consumption) is also important. Moreover, the amount of loans is one of the measurements of the financial sector, considering only its productivity. The works of Koetter and Wedow (2010) concern the efficiency of financial institutions by studying the quality versus the size of the banking sector in Germany. That work showed that it is the quality of loans (in the form of reduction of the financing costs), not their quantity, that influences economic growth. The studies proving the importance of supplying credit to German industry in the years 1860–1913 also confirm the thesis regarding the importance of financing for economic development (Burhop, 2006). A conclusion can be drawn that the economy changes in time and the impact may be various not only depending on the specifics of a given country, but also on the period studied.

4. Financialization and economic growth

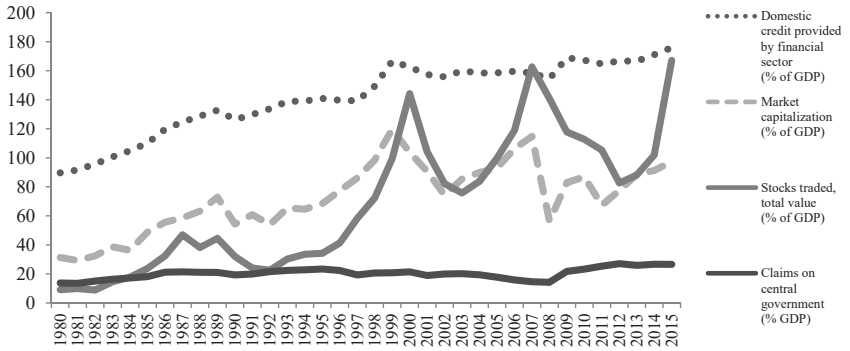
According to the problem studied and the research issues, many studies use various measures of evaluation and strength of economic financialization, which is the reason why the process is looked into only on a fragmentary basis (Wiśniewski, 2014).

The aim of this study is the analysis of the impact of the financial sector on economic growth in the context of the growing phenomenon of financialization, which was one of the most significant reasons for the financial crisis. The study was focused on presenting the growing scale of this phenomenon and analysing the impact of the money supply in USD and EUR on the world GDP and the GDP of the USA and the Eurozone (Włodarczyk, 2017). The following hypothesis was proposed: the growing process of financialization causes the growth of the USD and EUR supply, influencing changes in world GDP, the GDP of the USA and the GDP of the Eurozone. In order to present the scale of the impact of the financial sector on the economy, the study used selected measurements of the nominal turnover of the financial markets with regards to GDP, as well as the relation of the M2 money supply (in USD and EUR) to GDP. However, the study of the impact of money supply (USD and EUR) on economic growth in the USA, the Eurozone and the world GDP was based on the study of Pearson correlation coefficients with the use of the VAR model and Granger causality; the studies were performed with the use of Gretl software. The data was obtained from the World Bank database covering the years 2002–2016.

4.1. The study of financial sector participation in the economy

The growth in money supply, more precisely financialization, is treated as a long-term tendency to change the role of the financial sphere and its impact on the economy. The results of this are increases of the nominal value of certain segments of the financial sector to GDP and the increase of profits from financial activity that are not only found in financial markets. The sources of financialization need to be researched in the process of transforming the interests of the financial sector, which implicates a transformation of the structure and functioning of the financial markets, socio-economic policy solutions, and also the behaviour of enterprises and households (Palley, 2007). The measurements showing the growing scale of the financial sector in the global economy are presented in relation to GDP and can be used in various analytical approaches. For the sake of the study, four measurements in relation to GDP were chosen (Figure 1).

Figure 1.
The relation of selected measurements to world GDP



Source: own study based on World Bank data.

Used world measurement aggregator:

Domestic credit provided by financial sector (% of GDP) – The national credit provided by the financial sector comprises all the credits for various sectors in the gross approach, excluding the credits for the central government which is in net. The financial sector includes monetary authorities and deposit banks and also other financial institutions. The examples of other financial institutions are financing and leasing companies, lenders, insurance institutions, pension funds and foreign exchange companies, the International Monetary Fund, International Financial Statistics and Data Files, and the World Bank's GDP valuation and the OECD.

Market capitalization (% of GDP) – Market capitalization of partnerships listed in the capital market. Market capitalization (also known as market value) is the price of stock for partnerships from national lists. Investment funds, units of participation and partnerships whose only aim of activity is owning the stock of other partnerships listed on the stock exchange. The data are values from the end of the year. Database of the World Federation of Exchanges.

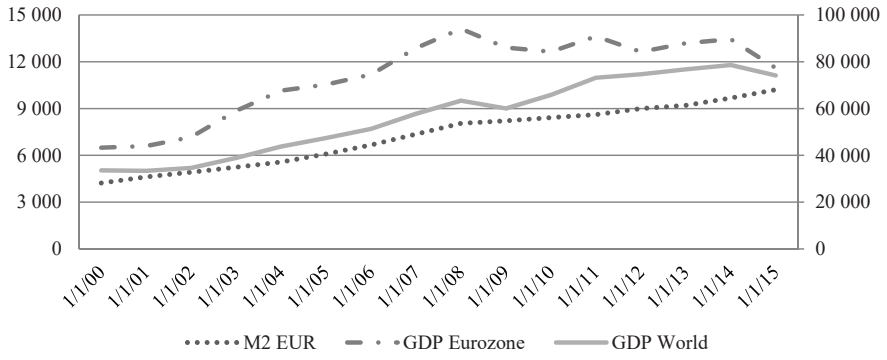
The total value of stock exchange trading to GDP – The value of shares in trading is the total number of shares, both national and foreign, multiplied by their prices. Data is counted singly (refers only to one side of the transaction). Companies authorized for marketing are included in the data. The data are values from the end of the year. Database of the World Federation of Exchanges.

Claims on central government, etc. (% GDP) – Charges from the central government and the financial sector. Administrative claims include the loans given to central institutions without deposits.

The presented relationship of the chosen measurements to the world GDP in the years 1980–2015 showed their significant dynamics. In the period studied the growth of assets of the financial sector to GDP increased by 96.28%; capitalization of capital markets to GDP increased by 211.3%; value of stock exchange trading to GDP increased by 1718.38%, government loans to GDP increased by 93.90%. Special attention needs to be given to the huge and uneven dynamics of the value of stock exchange trading to GDP, whose effect is not only the increase of the amount of money in the market, but also the accompanying high instability of markets, and in consequence is creating speculative bubbles which are the reason for financial and economic crises. This negative effect of the financial sector on the macroeconomic stability and, consequently, changes in GDP were noticed at the beginning of the 1990s by Minsky who set up a hypothesis of financial instability. He pointed out that 'sophisticated' financial institutions create speculative demand for money, increasing the insecurity on the markets and raising the cost of capital obtainment, forcing business entities to undertake more and more risky solutions to finance their economic activity (Minsky, 1992).

Analysing the scale of the financialization process and its impact on the changes of GDP in the study, a statistical comparison of the EUR and USD supply was carried out, using the M2 aggregate and the growth dynamics of GDP for the Eurozone, USA and the world (Figure 2, Figure 3).

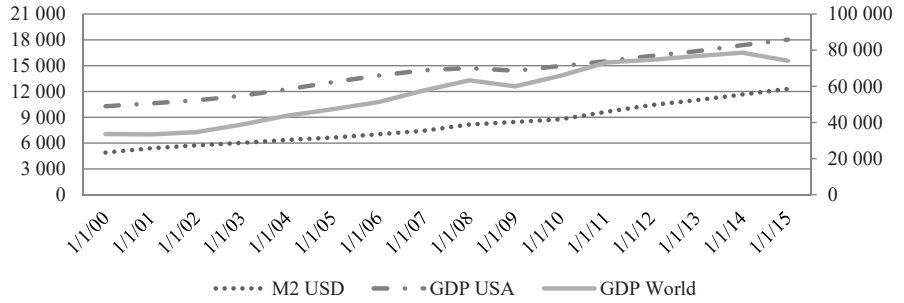
Figure 2.
The Euro-M2 relation to the world GDP and the Eurozone (in billions)



Source: own study based on World Bank data.

In the years 2000–2015 we observe a significant growth of both the GDP of the global economy and the Eurozone, as well as the supply of the Euro. Over a 15-year period, the growth of the Euro supply was 152.8%, the growth of GDP in the Eurozone 63.4% and world GDP was 121%.

Figure 3.
The relation of the USD-M2 to USA and world GDP (in billions)

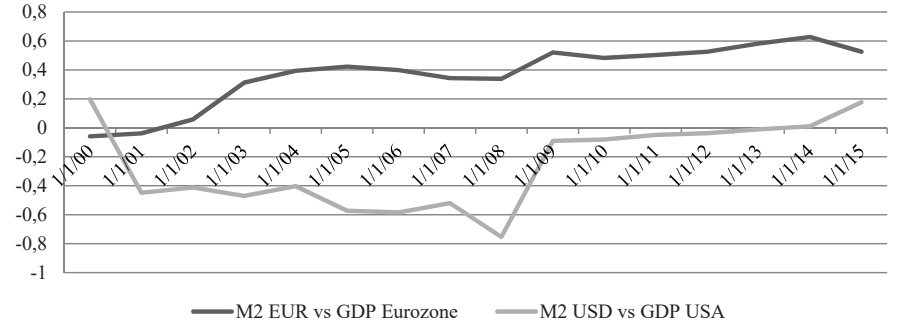


Source: own study based on World Bank data.

In the analyzed period from 2000 to 2015 the growth of the USD money supply was 38.2%, and the growth of the GDP of the USA was 88%.

An essential aspect in the analysis of the impact strength of the financial sector on economic growth is presented, by means of the Pearson correlation, the relationship of the money supply M2 EUR to the GDP of the countries in the Euro area and M2 USD to the GDP of USA in 1990–2015. The correlations were calculated by generating the return rate from the time series of two variables for the same periods. Ten variables taken for the correlation are presented in Figure 4.

Figure 4.
The correlation of the GDP of the Eurozone to EUR-M2 and the GDP of the USA to USD-M2



Source: own study based on World Bank data.

The correlation coefficient r for M2 and the GDP of the Euro area in the years 2000–2015 was at a low correlation at the level of 0.03 in 2000, but increased to a high correlation of 0.627 in 2014. The Euro was introduced in 2000 for international settlements, and later in 2002 into circulation. We have been observing

a gradual increase of the correlation power of the EUR supply to the GDP of the Eurozone. The correlation of the USD in relation to the GDP of the USA in the analysed period fluctuated from a level of low correlation (0.2 in the year 2000) to a lack of correlation from 2001 to the end of 2009. After the period of the global financial crisis, despite the changing trend, we have still been observing the lack of or the poor correlation between the USD supply and the GDP of the USA.

4.2. The study of the correlation between the amount of money M2EUR, M2USD and GDPWORLD and GDPEURO with the use of the VAR model and Granger causality

VAR models must be built on stationary variables, and the rest of the models built must be characterized by normal distribution and the lack of autocorrelation. For the study of the stability distribution of variables, an extended Dickey-Fuller test (ADF) was used. The next step was to establish the number of delays for the models. The number of delays is established on the basis of the following information criteria: AIC (Akaike), BIC (Bayesian information criterion), and HQ (Hannan-Quinna). The BIC criterion was used and such a value of delay was chosen for which the criterion was the lowest. Delays from 0 to 24 were chosen in the search for the most optimal one. After these steps were completed, the VAR models could be made. The normality of the distribution of the rest of the models was checked with the Doornik-Hansen test, and the autocorrelation of the rest was done with the Ljung-Box test. Causality in the Granger sense shows that the variable X1 is the cause of the variable X2 (X1→ X2) in terms of the Granger testing, if the current values of the X1 variable can be forecast with a greater accuracy with the use of the former X2 values than without their use, the rest of the conditions being the same. The test was conducted using the VAR model without restriction, and then the same model was evaluated with restrictions put on the model parameters, which means all the parameters equal zero, which leads to model valuation without considering other explanatory variables than the values of the explained variable. To verify the test the F test was used. The accepted level of relevance was 0.05.

In the first stage of the studies, based on 180 observations of certain variables, their logarithmic increments were designated. Figure 1 presents the values of the analysed variables and their logarithmic increments, on the basis of which the chosen descriptive statistics were marked (Table 1).

Table 1.
Descriptive statistics of the logarithmic increments of the variables analysed for the observation of the sample 2002:01 – 2016:12

Variable	Average	Median	Minimum	Maximal
M2 USD	–0.00495737	–0.00479944	–0.0221560	0.00460484
M2 EUR	–0.00465102	–0.00435686	–0.0180596	0.00359292
GDP USD	–0.00309541	0.00000	–0.0221267	0.0199443
GDP EUR	–0.00230751	0.00000	–0.0567850	0.0812798
GDP WORLD	–0.00738933	0.00000	–0.217677	0.0334847
Variable	**Standard deviation**	**Coefficient of variation**	**Slant**	**Kurtosis**
M2 USD	0.00358053	0.722263	–1.52220	6.25645
M2 EUR	0.00335733	0.721847	–0.844232	1.75580
GDP UDS	0.00598558	1.93369	–0.867281	1.49152
GDP EUR	0.0201146	8.71700	0.205876	2.81922
GDP WORLD	0.0333172	4.50882	–4.51715	20.2416

Source: own study.

In three cases we can observe left-handed asymmetry (only the GDP Eurozone is characterized by right-handed asymmetry).

Before starting the construction of the VAR models, the stability of variables was checked. The results of the ADF test are presented in Table 2. Based on them, the stability of the analysed time series was found. This can be observed thanks to the *p*-value which takes values lower than 0.05 and provides the reason for rejecting the zero hypothesis with regard to the stability of variables.

Table 2.
The results of the stability of the logarithmic increments of the analysed variables

	ADF (Without trend, with constant)	
Variable	**Stat. t (*p*-value)**	**Number of delays**
M2EUR	–5.8737 (0.000)	1
GDP Eurozone	–13,4443 (0.000)	1
GDPWORLD	–13.9439 (0.000)	1
M2USD	–9.8121 (0.000)	1
GDPUSA	–15.611 (0.000)	1

Source: own study.

Four two-equation VAR models were built. The models describe the following relationships:

1. M2 EUR to GDP Eurozone,
2. M2 EUR to GDPWORLD,
3. M2 USD to GDPUSA,
4. M2 USD to GDPWORLD.

In further stages, the number of delays for the models was calculated (Table 3) and the test of autocorrelation and normality of the rest of the models was also calculated (Table 4).

Table 3.
The results of the number of delays of the models

Models	Row of delays	Value of criterion BIC
Model 1	12	–14.977
Model 2	12	–12.077
Model 3	3	–16.619
Model 4	12	–11.887

Source: own study.

Table 4.
The results of the autocorrelation and normality of the rest of the models test

	Test	LB		DH	
	Equation	Value Q'	*p*-value	Value χ^2	*p*-value
Model 1	Equation 1	2.979	0.395	2.249	0.690
	Equation 2	4.185	0.242	4.678	0.322
Model 2	Equation 1	2.278	0.426	13.281	0.512
	Equation 2	0.068	0.995	7.539	0.110
Model 3	Equation 1	0.4508	0.930	3.949	0.413
	Equation 2	4.3397	0.227	5.795	0.215
Model 4	Equation 1	0.139	0.987	4.651	0.325
	Equation 2	0.127	0.988	5.949	0.203

Source: own study.

The study showed that in all of the models with the suggested value of delay, autocorrelation took place. It was tested with a delay of 3. The tests went well, and hence the rest of the equations have a normal distribution and are characterized as having a lack of autocorrelation.

Next, the parameters of the valuated models were noted (Table 5). In the table, the significant coefficients at the level of 0.05 have been marked.

Table 5.
The valuated VAR model parameters

Model 1	**Constant**	**M2 EUR (-1)**	**M2 EUR (-2)**	**M2 EUR (-3)**	**GDP Eurozone (-1)**	**GDP Eurozone (-2)**	**GDP Eurozone (-3)**
M2 EUR	**–0.0011**	**0.1724**	0.1045	**0.3507**	–0.0038	0.0027	–0.0172
GDP Eurozone	–0.0006	–0.1197	0.5234	0.0811	–0.0219	–0.0259	**–0.6950**
Model 2	**Constant**	**M2 EUR (-1)**	**M2 EUR (-2)**	**M2 EUR (-3)**	**GDP World (-1)**	**GDP World (-2)**	**GDP World (-3)**
M2 EUR	**–0.0010**	**0.1799**	0.0981	**0.3455**	0.0068	–0.0077	0.0024
GDP World	–0.0013	0.0362	0.0010	0.2672	–0.0685	–0.0694	–0.0684
Model 3	**Constant**	**M2 USD (-1)**	**M2 USD (-2)**	**M2 USD (-3)**	**GDP USA (-1)**	**GDP USA (-2)**	**GDPUSA (-3)**
M2 USD	**–0.0039**	**0.3126**	0.0253	0.0201	**–0.1299**	0.0738	–0.0704
GDP USA	**–0.0029**	**–0.1719**	**–0.1768**	0.0392	–0.1258	–0.1523	0.6977
Model 4	**Constant**	**M2 USD (-1)**	**M2 USD (-2)**	**M2 USD (-3)**	**GDP World (-1)**	**GDP World (-2)**	**GDP World (-3)**
M2 USD	**–0.0035**	**0.2551**	0.0374	0.0907	–0.0089	–0.0017	–0.0028
GDP World	–0.0016	0.1889	–0.8809	0.8025	–0.0607	–0.0771	–0.0705

Source: own study.

In the final stage of the tests, the Granger causality test for the constructed models was performed (Table 6).

Table 6.
The results of the Granger causality test

Zero hypothesis	**Statistics F**	***p*-value**
M2EUR does not affect GDPEurozone	2.427	**0.007**
GDP Eurozone does not affect M2EUR	0.723	0.727
M2EUR does not affect GDPWorld	1.108	0.358
GDPWorld does not affect M2EUR	0.388	0.966
M2USD does not affect GDPUSA	2.570	**0.004**
GDPUSA does not affect M2USD	1.930	**0.036**
M2USD does not affect GDPWorld	1.060	0.399
GDPWorld does not affect M2USD	2.640	**0.003**

Source: own study.

The values presented in the table above mean that the p-values received when testing the zero hypothesis have a lack of causality in the Granger sense. The results are lower than the accepted level of significance, which means rejecting the zero hypothesis. The table presents a situation where the test showed causality in the Granger sense at a statistically significant level of 0.05. In the study, it turned out that the M2-EUR influences the GDP of the Euro zone at a statistically significant level.

Conclusions

Based on the literature, it may be stated that in the beginning the importance of the financial system in economic growth was marginalized or even completely neglected. Just in the 20th century, it was noticed that the financial system played an important role and the amount of money in circulation, as well as the number of loans, was important for the level of investments and consumption. Nowadays we observe economic neoliberalism, postulating reducing regulations especially on the financial markets and the lack of a leading investment country to a large extent. 'Financial imperialism', is manifesting itself with the dominant role of the financial sector in the real economy and the increase of the debt of households, enterprises and countries debt. The increase of the world debt and its diversification lead to a situation where the money supply is the main factor of consumption and investment increase, which consequently influences economic growth. A crucial correlation of the GDP of the Eurozone with the increase of the EUR at 0.63 proves the strong relationship, which is also confirmed by Granger causality testing. In the case of the USD supply to the GDP of the USA, we observe a lack of correlation. The study confirmed the hypothesis of the relation of the money supply with the changes in economic growth. It was statistically significant at 0.05 that the amount of M2USD and both the US GDP and the world GDP influence one another, and also that M2EUR influences the GDP of the Eurozone and the world GDP. However, influencing economic growth with money supply diminishes the purchasing power of business entities and has the effect of growing debt. This does not result from the strength of a growing real economy. Observing economic growth, we notice a proportional increase of debt in the real economy and as a consequence, through a new crisis, we will return to the initial situation, remaining at higher levels of debt. The twisting spiral of debt in the long-term is destructive and dangerous for the economy, and will lead to the dominant position of the financial sector who will continue to increase their profits.

The growing value of turnovers in the capital markets and their capitalization in relation to GDP does not have a connection with the needs of the real economy and creates a speculative money demand, increases the insecurity of the

markets and the cost of capital obtainment, and as a consequence destabilizes the economy – which ultimately causes crises.

A repair of the current 'system' may be looked for not in the constantly increasing macroprudential regulations, but in a return to a country's interventionism, leading to a change of the priorities for financial institutions, mainly banks, with the supply of money based on fixed parities (gold, energy). The lack of firm action will lead to further financial crises whose causes will be national debt, speculative bubbles or financialization of the real economy in every aspect of its activity. The costs of failure will be paid by everyone in the form of higher taxes and public debt.

The issue described needs further study and verification due to the constant and speedy process of the internationalization of economies, mainly the financial systems.

Bibliography

Aalbers, M.B. (2015). The potential of financialization, corporate financialization. In: N. Castree (eds.), *The International Encyclopedia of Geography: people, the earth, environment, and technology*. Oxford: Wiley, 5, 2, 214–219.

Balcerzak, A. (2009). *Infrastruktura finansowa jako czynnik wzrostu gospodarczego*, PTE: Toruń.

Bator-Kędra, K. (2005). Kontrowersje wokół powiązań polityki monetarnej i sfery realnej gospodarki. In: D. Kopycińska (ed.) *Teoretyczne aspekty gospodarowania*. Szczecin: Katedra Mikroekonomii Uniwersytetu Szczecińskiego.

Beck, T., Levine, R., Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, 58(1/2), 261–300.

Bhaumik, S.K., Piesse, J. (2008). Does the lending behaviour of banks in emerging economies vary by ownership? Evidence from the Indian banking sector. *Economic Systems*, 32(2), 177–196.

Burhop, C. (2006). Did banks cause the German industrialization? *Explorations in Economic History*, 43(1), 39–63.

Calza, A., Manrique, M., Sousa, J. (2006). Credit in the Euro area: an empirical investigation using aggregate data. *The Quarterly Review of Economics and Finance*, 46(2), 11–226.

Clarke, M.Z. (2004). Geographic deregulation of banking and economic growth. *Journal of Money, Credit, and Banking*, 36(5), 433–451.

Demirgüç-Kunt, A., Maksimovic, V. (1998). Law, finance, and firm growth. *Journal of Finance*, 53, 2107–2137.

Gkanoutas-Leventis, A., Nesvetailova, A. (2015). Financialization, Oil and the Great Recession, *Energy Policy*, 86, November, 891–902.

Goldsmith, R.W. (1969). *Financial structure and development*. New Haven, CT: Yale University Press.

Ivie, M. (2008). *Credit markets and economic growth in the United States*. Atlanta: Andrew Young School of Policy Studies, Department of Economics.

King, R., Levine, R. (1993). Finance and growth, Shumpeter might be right. *The Quarterly Journal of Economics*, 108(3), August, 717–737.

Koetter, M., Wedow, M. (2010). Finance and growth in a bank-based economy: is it quantity or quality that matters? *Journal of International Money and Finance*, 29(8), 1529–1545.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. (2000). *Government ownership of banks*. Cambridge: NBER. Working Paper Series, 762.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113–1155.

Levine, R. (2004). Finance and growth: theory and evidence. *NBER Working Paper* 10766, 1(12), 865–934.

Levine, R., Loayza, N., Beck, T. (2000). Financial intermediation and growth: causality and causes. *Journal of Monetary Economics*, 46(1), 31–77.

Liberda, B., Tokarski, T. (1999). Determinanty oszczędności i wzrostu gospodarczego w Polsce w odniesieniu do krajów OECD. *Ekonomista*, 3, 249–268.

Lown, C.S., Morgan, D.P. (2002). Credit effects in the monetary mechanism. *Federal Reserve Bank of New York, Economic Policy Review*, 8, 217–235.

Lown, C.S., Morgan, D.P. (2006). The credit cycle and the business cycle: new findings using the loan officer opinion survey. *Journal of Money, Credit and Banking*, 38(6), 1575–1597.

Marszałek, P. (2012). Finansyzacja – problem i kontrowersje. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 247, 220–230.

McCaig, B., Stegos, T. (2005). Financial intermediation and growth: some robustness results. *Economic Letters*, 88(3), 306–312.

Micco, A., Panizza, U. (2006). Bank ownership and lending behaviour. *Economics Letters*, 93(2), 248–254.

Minsky, H.P. (1992). The financial instability hypothesis. *The Levy Economics Institute of Bard College Working Paper Collection*, 74.

Nowak, E. (2006). *Zarys metod ekonometrii. Zbiór zadań*. Warszawa: PWN.

Palley, T.I. (2007). Financialization: what it is and why it matters. *The Levy Economics Institute and Economics for Democratic and Open Societies Working Paper*, 525.

Puczkowski, B. (2010). The role of banks in utilization of the EU funds. *Olsztyn Economic Journal*, 5, 346–356.

Rajan, R.G., Zingales, L. (1998). Financial dependence and growth. *American Economic Review*, 88(3), 559–586.

Ratajczak, M. (2012). Finansyzacja gospodarki. *Ekonomista*, 3, 281–302.

Wiśniewski, P. (2014). Nowe miary finansjalizacji. In: J. Ostaszewski, E. Kosycarz (eds.), *Rozwój nauki o finansach. Stan obecny i pożądane kierunki jej ewolucji*. Warszawa: SGH.

Włodarczyk, B. (2014). Komu służy system finansowy? Refleksja po światowym kryzysie finansowym. *Studia i Prace Kolegium Zarządzania i Finansów (SGH)*, 140, 179–188.

Włodarczyk, B. (2017). Zmienność cen na rynkach towarowych a ryzyko banku. *Problemy Zarządzania*, 2(1), 107–124.

Żyżyński, J. (2010). Neoliberalizm – ślepa uliczka globalizacji. In: G.W. Kołodko (red.), *Globalizacja, kryzys i co dalej?* Warszawa: Poltext.

The impact of the financial sector on economic growth

Summary

The approach of a unilateral impact of the financial sector on economic growth was invalidated by the last financial crisis which very quickly changed into a global economic crisis.

The aim of the study is the analysis of the impact of the financial sector on economic growth in the context of the growing phenomenon of financialization, which was one of the significant reasons of the financial crisis. The study was focused on presenting the growing scale of this phenomenon and analysing the impact of money supply in USD and EUR on world GDP and the GDP of the USA and the Eurozone. The following hypothesis was postulated: the growing process of financialization causes the growth of the USD and EUR supply, influencing changes in the world GDP, the GDP of the USA and the Eurozone. The study confirmed the hypothesis of the relation of the money supply with changes in economic growth. However, influencing economic growth with the money supply causes the purchasing power of business entities to decrease and causes growing debt. Furthermore, it does not contribute to the strength of the real economy. A repair of the current "system" should not be sought for in constantly increasing macroprudential regulations, but in a return to a country's interventionism, leading to a change in the priorities of the actions of financial institutions; mainly banks, and the supply of money based on fixed parities (gold, energy).

Key words: financial sector, economic growth, financialization