

The relationship between the development of the financial sector and economic growth - a regional approach

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Keywords

Financial sector development, economic growth, regional development, financialization

Abstract

The intense debate on the impact of the growing financial sector on the economy has been ongoing for two decades. The debaters concentrate on showing these dependencies in relation to the economies of individual countries as a whole while completely ignoring the regional perspective. Meanwhile, the results of analyses at the regional level may completely differ from the results at the country level. A niche area was identified in work on the relations between the development of the financial sector and economic growth: the lack of a regional approach. In the manuscript, regional research results using the example of Polish regions, and further possibilities of using research from a regional perspective are presented. The results obtained at the regional level lead to different conclusions than those at the national level. National surveys indicate that Poland is a country in which the level of development of the financial sector is optimal. Regional research provides knowledge of Poland's regions, where further development of the financial sector remains beneficial. The presented methodology can also be applied to the analysis of regions of other countries, and the present research constitutes the verification of research tools for international analyses.

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1. Introduction

Economic growth is one of the ultimate goals of any economic system. The debate on the impact of the growing financial sector (this phenomenon is often called financialization (Epstein 2005)) has been going on for two decades. Previous research indicates a linear, growing dependence between the development of the financial sector and economic growth and development (Levine 1997, Caprio, Honohan 2001, Lopez, Spiegel 2002), as well as an existing dependence in the reverse form of the letter "U", a parabola with arms pointing down (Arcand et al. 2015, Cecchetti, Kharroubi 2012, Pagano 2014). The results of research carried out by the International Monetary Fund (Sahay R. et al. 2015) have placed Poland almost at the top of this parabola, which means that there is an optimal level of development of the financial sector in that country.

The research carried out to date focuses on showing the relationship between the development of the financial sector and economic growth and development in relation to the economies of individual countries as a whole while completely ignoring regional aspects. Meanwhile, the results of analyses at the regional level may completely differ from the results of those at the country level. In the presented research, this has identified a niche area regarding the relationships between the development of the financial sector and economic growth: the lack of a regional approach.

The aim of the study is to determine the information capacity of the study of dependencies between the development of the financial sector and economic growth in individual regions of the country. For the purposes of this study, a research hypothesis was put forward that "the study of

dependencies between the development of the financial sector and economic growth from a regional perspective allows for the creation of an accurate picture of the relationships between these areas." Researched relationships between the development of the financial sector and economic growth at the regional level have been carried out using the example of Polish regions. The presented methodology can also be applied to the analysis of regions of countries other than Poland, and this presented research is a verification of research tools for international analyses.

The rest of this article is organized as follows. Section 2 provides an overview of the literature on the main results of empirical research into the relationship between financial sector development and economic growth. Section 3 describes a proposal methodology that can be used to analyse the relationship between financial sector development and economic growth at the regional level. The types of data taken into account and the approach adopted are discussed here. Section 4 describes the results of empirical research obtained using the proposed methodology for individual regions of Poland. The main findings are reiterated in Section 4, where the results obtained are compared with those of previous studies conducted at the national level and are discussed. This part also includes conclusions on the usefulness of the proposed methodology. Section 5 discusses research limitations and directions for further research.

2. Literature review

The relationship between the development of the financial sector and economic growth and development has been the subject of research by many authors. In these studies, two stages can be distinguished: the first stage, usually covering the period from the 1970s or 1980s to 2006 or 2007, comprise studies wherein there is usually a positive relationship between the development of the financial sector and economic growth; the second stage, in which a longer period of time was used for analysis, also sometimes spans the 1970s and 1980s to the present. The second stage of research also takes into account the period of the global financial crisis and usually finds that the growth of the financial sector is beneficial to the economy only to a certain extent, as the long-term disadvantages outweigh the advantages resulting from the development of the financial sector.

Analyses did not present a uniform view of the development of the financial sector, and it was very differently perceived and measured. As for measures of financial development, the most common were the ratio of bank deposits to GDP, share market value to GDP, size of M2-type monetary aggregates or similar to GDP (Sawyer 2014). Only two measures were used in research in the financial development of OECD countries: added value created by the financial sector to the value added generated by the entire economy, and average employment in the financial sector to employment in the entire economy (Assa 2012). Other measures used were the following relations: mortgage loans to GDP, private debt to GDP (Jorda et al. 2014), private debt to GDP in relation to total debt of economic entities in relation to consumption, share of financial assets in total assets and profits from operations in relation to the total profits of non-financial enterprises, and the ratio of corporate investment to the level of their total indebtedness and in relation to total profits (Gołębiowski, Szczepankowski 2015, 204). In addition, the following measures were used: the number of non-bank financial institutions in relation to the number of financial institutions, banks' earnings achieved through other channels than the spread in credit and deposit rates, banks' willingness to extend loans to households and enterprises, exchange rate volatility, the size of net capital flows in relation to GDP, directions of capital flow, and frequency of financial crises (Stockhammer 2010).

Research during the first stage pointed to the financial sector as the driving force of the economy. According to the theory of effective markets and Tobin's Q theory (1977), the increase in importance of financial markets should favour the increase of efficiency in other sectors of the economy. It was believed that a well-functioning financial system is indispensable for economic development; moreover, it supports the development processes and efficiency of other sectors. This was in line with the views expressed by Friedman (1953), who considered economic freedom as a

superior goal and saw nothing wrong in increasing the importance of financial markets. Levin (1997, 2005) research conclusion emphasized the strong positive relationship between the development of the financial system and long-term economic growth. Similar conclusions were reached by Caprio and Honohan (2001), Lopez and Spiegel (2002), Caporale (2009) and Bijlsma and Dubovik (2014). Extensive research on this subject using a meta-analysis was conducted by Arestis, Chortareas and Magkonis (2014), and their results indicated a statistically significant positive relationship between the degree of development of the financial sector and economic growth and development (Arestis, Chortareas and Magkonis 2014, 10-12). A review of empirical research that proves the positive impact of the financial sector on economic growth and development is found in Moshirian's work (2011).

The crisis in the financial markets (2008) has changed the look of the effects of the rapid development of the financial sector on the economy and has shown how unstable were the foundations of economic growth in previous decades. Economists who criticized the excessive development of finance began to speak out. Minsky (1982) had already noticed that the easier access to credit facilitates increasing the cyclicity of the economy. In the conducted research, we appealed to Minsky and stressed that the effects of the financial sector growth were negative for the economy; they included increasing the susceptibility of the economy to financial crises, increasing financial investments at the expense of material investments, social inequalities, excessive indebtedness, etc. The financial cycles and instability of the economy that they cause have been examined by Borio (2013), Borio et al. (2016), and Borio, Lombardi and Zampolli (2017). Rousseau and Wachtel (2011) noted that the positive correlation between the development of the financial sector and economic growth is not as strong as it was in the 1960s-1990s. The rapid growth of the financial sector and its instability that may result in negative effects to the economy were examined by Beck, Degryse and Kneer (2014). The fact that the development of the financial sector may be disadvantageous for the economy during a short period of time and favourable in the long-term has been noted by Beck et al. (2003, 2014) and Loayza and Ranciere (2005).

One of the most well-known studies of the relationship between the development of the financial sector and growth and economic development was carried out by the International Monetary Fund and showed that this relationship takes the shape of an inverted letter "U", meaning a parabola with arms pointing down (Sahay R. et al. 2015). This means that the development of the financial sector is beneficial to the economy, but only to some extent. After exceeding a certain limit of the size of the financial sector, its further growth results in negative effects for the economy. Arcand, Berkes and Panizza (2015), Cecchetti and Kharroubi (2012), Pagano and Pica (2011), Pagano (2014), and Rioja and Valev (2004) came to similar conclusions. Rioja and Valev (2004) suggested that after exceeding a certain size of the financial system, there is a decrease in the benefits resulting from its functioning, which is faster than the initial increase in these benefits. Pagano and Pica (2011), based on the analysis of the annual value added for 63 countries, state that the growth of the financial sector is beneficial only for countries outside the OECD group, where through the development of the financial sector there is easier access to financing that was previously lacking. Pagano (2014) noted that the positive impact of financial market development on economic growth only occurs until a certain level of the loan to GDP ratio is achieved, but the impact is negative above this level. In turn, Arcand, Berkes and Panizza (2015) wrote about the ratio of private credit to GDP. According to them, when the ratio exceeds 100%, there is a negative relationship between the development of the financial sector and economic growth. Similar research was conducted by Barajas et al. (2013), who found that the relationship between the degree of development of the financial sector and economic growth depends on the structural and institutional factors of a given country. Cecchetti and Kharroubi (2012) stated that the ratio of private credit to GDP should not exceed 90-100% and that the financial sector is effectively competing with other sectors of the economy for

human capital and attracts the best talents, which has adverse effects on the entire economy; this latter suggestion was similar to the findings of Philippon and Reshef (2012).

3. Data and methodology

Regional research on the impact of financial sector development on economic growth was carried out using the example of 16 Polish regions. The administrative division of Poland assumes the division of this country into 16 voivodeships; for each voivodeship, the dependencies between the level of development of the financial sector and economic growth was analysed.

The first stage of the research was to identify variables that were then analysed. As a measure of the level of economic growth, the GDP per capita dynamics was adopted in the research. Determining the degree of financialization in the region posed numerous difficulties. Conducting research at the regional level required the proposition and use of a completely different set of data than in the studies conducted thus far at the national level. Exactly the same measures used in research determining the degree of financialization of the country could not be used, as many of them, such as stock market capitalization or money aggregates, are not and cannot be calculated for regions. The analysis required a transition from the national to the regional level and the selection of a different set of variables. While selecting variables for analysis, apart from substantive issues, the data availability was also guided. Lastly, 5 variables were selected for the analysis, defining the level of development of the financial sector in a given voivodeship. These were employment in the financial sector in a given voivodeship, salaries in the financial sector in the voivodeship, investment outlays and fixed assets of enterprises operating in the financial sector, investment outlays in enterprises operating in the financial sector, and credits and loans as sources of investment financing. These quantities were used to build indicators in absolute terms, which were finally used in surveys as measures determining the degree of development of the financial sector. The measurements used in the analysis and the designations assigned to them were collected and presented in Table 1.

Table 1. Indicators used in the analysis, determining economic growth and the degree of development of the financial sector in the regions

Measure s of economy c growth	Measures of the financial sector development stage	Determinati on of the measure of the developmen t of the financial sector
Dynam ics of GDP per capita	Number of employees in the financial sector in the region	A
	Salaries in the financial sector in the region	B
	Investment outlays and fixed assets of enterprises from the financial sector in the region	C

	investment outlays in enterprises operating in the financial sector in the region	D
	Investment outlays in enterprises in the region	
	Credits and loans as sources of financing investments in the region	E
	Sources of financing for total investments in the region	

Source: own study.

The data collected in the database "Local Data Bank" were used to construct the described results. The Local Data Bank is Poland's largest database on the economy, society and the environment. These data were additionally supplemented with information provided by the Central Statistical Office in Poland. The analysis took into account data from the years 2001-2016. However, some time series were shorter. This was due to the new division into sectors in the statistics in 2007, which in some cases resulted in the inability to compare data with information from previous years.

Between each measure of the development of the financial sector and the dynamics of GDP per capita, a correlation analysis was conducted to determine the relationships between variables. Then, a statistical significance test of each test was carried out at the level of 0.1. This means that with each correlation coefficient, it was assumed that the calculated value of the correlation coefficient is significantly different from zero, and 90% is not a coincidence. Verification of the truth of the hypothesis was made on the basis of statistics:

$$T_{n-2} = \frac{r}{\sqrt{1-r^2}} \sqrt{n-2},$$

Which, assuming the truth of the hypothesis, has a Student's t-distribution with n-2 degrees of freedom. Next, the obtained results were compared with the critical value read from the statistical tables for the significance level of 0.1 and the specified number of degrees of freedom. The time series used for particular variables differed among one another according to the availability and comparability of data. This meant that different correlation coefficients were used to determine different levels of significance. The critical set was determined based on the critical value. If the calculated T_{n-2} value did not fit into the critical set, this meant that the determined correlation coefficient could be considered significant. As a result, 80 different correlation coefficients and 80 statistical significance levels of 5 for each of the 16 regions were obtained.

4. Results

The research conducted indicated the diversified impact of the degree of development of the financial sector on the economic growth in individual regions of the country. The comparison of the obtained correlation coefficients is presented in Table 2. In brackets, the calculated value of the test statistic is given first, followed by the critical value read from the Student distribution tables. The values of correlation coefficients for which the materiality test was successful are marked in grey. In most cases, the value of T_{n-2} statistics was not in the critical set, which means there are no grounds to reject the hypothesis about the correlation of values.

Table 2. Correlation coefficients between economic growth and various measures of the financial sector development level in regions, as well as the value of test statistics and critical values for calculated correlation coefficients

Name of the voivodeship	Determination of the measure of the development of the financial sector				
	A	B	C	D	E
dolnoslaskie	0.39 (0.82; 0.67)	-0.09 (-0.09; 0.52)	-0.25 (-0.63; 0.62)	0.33 (0.87; 0.62)	0.43 (1.16; 0.62)

kujawsko-pomorskie	-0.54 (-1.06; 0.67)	0.23 (0.23; 0.52)	0.60 (1.85; 0.62)	0.52 (1.48; 0.62)	-0.31 (-0.81; 0.62)
lubelskie	0.74 (1.33; 0.67)	0.56 (0.57; 0.52)	0.71 (2.46; 0.62)	0.73 (2.60; 0.62)	0.24 (0.62; 0.62)
lubuskie	0.65 (1.22; 0.67)	0.83 (0.86; 0.52)	0.62 (1.94; 0.62)	0.45 (1.22; 0.62)	0.27 (0.70; 0.62)
lodzkie	-0.34 (-0.73; 0.67)	-0.34 (-0.35; 0.52)	0.73 (2.61; 0.62)	0.32 (0.84; 0.62)	0.34 (0.88; 0.62)
malopolskie	0.10 (0.22; 0.67)	0.61 (0.62; 0.52)	0.49 (1.37; 0.62)	0.01 (0.01; 0.62)	0.55 (1.63; 0.62)
mazowieckie	-0.64 (-1.21; 0.67)	0.78 (0.81; 0.52)	0.67 (2.21; 0.62)	0.35 (0.91; 0.62)	0.23 (0.59; 0.62)
opolskie	0.41 (0.85; 0.67)	0.38 (0.38; 0.52)	0.60 (1.85; 0.62)	0.29 (0.74; 0.62)	0.06 (0.14; 0.62)
podkarpackie	0.51 (1.01; 0.67)	0.36 (0.36; 0.52)	0.27 (0.69; 0.62)	0.52 (0.49; 0.62)	-0.29 (-0.74; 0.62)
podlaskie	0.38 (0.80; 0.67)	-0.03 (-0.03; 0.52)	0.64 (2.06; 0.62)	0.59 (1.77; 0.62)	-0.39 (-1.04; 0.62)
pomorskie	0.16 (0.36; 0.67)	0.59 (0.60; 0.52)	0.32 (0.81; 0.62)	0.21 (0.52; 0.62)	0.50 (1.43; 0.62)
slaskie	-0.39 (-0.80; 0.67)	0.25 (0.25; 0.52)	0.64 (2.04; 0.62)	0.74 (2.67; 0.62)	0.66 (2.17; 0.62)
swietokrzyskie	0.57 (1.10; 0.67)	0.38 (0.39; 0.52)	0.62 (1.92; 0.62)	-0.42 (-1.13; 0.62)	-0.31 (-0.80; 0.62)
warminsko-mazurskie	0.61 (1.17; 0.67)	0.70 (0.72; 0.52)	0.72 (2.57; 0.62)	0.68 (2.28; 0.62)	0.76 (2.84; 0.62)
wielkopolskie	0.60 (1.14; 0.67)	0.63 (0.65; 0.52)	0.45 (1.25; 0.62)	0.42 (1.12; 0.62)	0.11 (0.26; 0.62)
zachodniopomorskie	0.68 (1.26; 0.67)	0.61 (0.63; 0.52)	0.71 (2.50; 0.62)	0.54 (1.58; 0.62)	0.50 (1.24; 0.62)

Source: own study.

In the above table, the results for the voivodeships in which the high relations between the degree of development of the financial sector and economic growth are the most frequent are bolded. In the warminsko-mazurskie and zachodniopomorskie voivodeships, for each variable describing the degree of development of the financial sector in the region, the results indicated a high, positive correlation with economic growth. This means that the development of the financial sector in this region will be conducive to economic growth. In the second group of regions for which the results indicate further development of the financial sector beneficial for the region, the following voivodeships were located: lubelskie (high, positive correlation for four financial sector development indicators) and lubuskie (high, positive correlation for three financial sector development indicators, at 0.83, for dependencies between economic growth and the number of employees in the financial sector).

In some cases, negative correlation coefficients were recorded, e.g., for the mazowieckie voivodeship the correlation coefficient between economic growth and the number of employees in the financial sector amounted to -0.64. This means a strong inverse relationship between these variables. Further increases in the number of employees in the financial sector will cause a decline in economic growth. It is worth noting that the capital of Poland, Warsaw, is located in the mazowieckie voivodeship. The area of the capital and the mazowieckie voivodeship are characterized by a high density of financial institutions and hence a large number of people working in the financial sector. Perhaps this confirms the theory of Philippon and Reshef (2012) and Cecchetti and Kharroubi (2012), who claimed that the financial sector attracts the best talents and that this inhibits the development of other sectors, which, given the high level of development of the financial sector, produces adverse effects for the entire economy.

5. Discussions and conclusions

The analysis conducted showed the beneficial effect of the further development of the financial sector in some regions of Poland and its adverse impact in other regions. The research results obtained seem to confirm the conclusions from the second stage of research on the relationships between the development of the financial sector and economic growth (among others, Rioja and Valev 2004, Cecchetti and Kharroubi 2012, Pagano 2014, Arcand, Berkes and Panizza 2015, Sahay R. et al. 2015) and reject the results of the first stage of research (among others, Levin 1997, Caprio and Honohan 2001, Lopez and Spiegel 2002, Caporale 2009 and Bijlsma and Dubovik 2014).

The results of the first stage of research present the positive relationship between the development of the financial sector and economic growth. They were not confirmed by the results of the research, because for some regions of the country, correlation coefficients were negative, which means a negative relationship. The authors of the second stage of research argue that the relationship between the economic growth of economic development and the degree of development of the financial sector takes the shape of a reversed letter "U". The development of the financial sector is only beneficial to a certain degree, as after exceeding a certain level of development of the financial sector, its further growth adversely affects growth and economic development.

The regions of the country for which the conducted research indicated a strong positive relationship with economic growth are the poorest regions of Poland, with a small degree of development of the financial sector. This would mean that they are located on the rising arm of the parabola, described in the literature. Further development of the financial sector in this region would be beneficial. This can be justified given the case of Pagano and Pica's (2011) earlier lack of access to sources of financing in this region. Along with the development of the financial sector, there may be further opportunities to search for financing to favour economic growth in the region.

On the other hand, negative relations between the development of the financial sector and economic growth appeared in well-developed regions, such as the mazowieckie voivodeship and the capital of Poland. This would mean that these voivodeships can be placed on the other, falling arm of the parabola.

The analysis of the obtained research results leads to two important conclusions. First, there is regional diversification regarding the impact of financial sector development on economic growth. The results of the conducted research clearly indicate such a conclusion. From this comes the second application, which confirms the research hypothesis proposed at the outset, that the study of dependencies between the development of the financial sector and regional economic growth allows for the creation of an accurate picture of the relationships between these areas. Regional research has provided knowledge of the regions of Poland in which further development of the financial sector is beneficial and those in which it is disadvantageous. Such knowledge could not be obtained using the analysis at the level of the entire country. The presented methodology can also be applied to the analysis of regions of countries other than Poland, and the research presented is a verification of research tools for international analyses.

6. Research limitations and directions for further research

The applied research method was based on the use of correlations between various variables. In the subject literature on research conducted at the national level, one can find the use of other, advanced analytical methods. In further research, it is advisable to also apply other test methods and compare the results obtained.

Research conducted on regions requires the use of a different set of indicators determining the degree of development of the financial sector. Measurements of financial sector development must take into account variables characteristic of regions. Five different measures of the financial sector development stage were used in the research conducted. The choice of data was dictated by substantive considerations but also by their availability or the lack thereof. In further analyses, it is

recommended to search for other measures determining the degree of development of the financial sector and enriching this with the set of variables not used. These may be measures related to the situation:

households, e.g., household debt ratio in relation to GDP in the region, consumption in relation to GDP in the region, household debt in relation to household consumption in the region;

enterprises, e.g., the share of financial assets of enterprises operating in the region in relation to their total assets, the share of financial profits of enterprises operating in the region in relation to their total profits;

the economy as a whole, e.g., the value added generated by the financial sector in the region in relation to the value added generated in the region, the number of financial institutions operating in the region to the total number of institutions in the region. At the same time, when analysing the number of institutions operating in the region, it would be necessary to take into account not only banking institutions but also those from the non-banking sector. It may happen that, as a result of tightening the criteria for granting loans, clients from the banking sector will switch to non-banking sector institutions (Gemzik-Salwach 2017).

These measures should be tested and perhaps on that basis one should create an index of the development of the financial sector that would include all of these measures. The enrichment of the set of variables used should have a positive effect on the quality of the results obtained.

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