



Article

The Influence of the Banking Sector on Economic Growth and Commodity Prices: A Panel Data Analysis of Spain, France, and Romania

Houssemeddine Hamdaoui * and Maite Cancelo *

Department of Quantitative Economics, Faculty of Economics and Business Sciences, Applied Economics, University of Santiago de Compostela, Santiago de Compostela, 15782 A Coruna, Spain

* Correspondence: houssemeddine.hamdaoui@rai.usc.es (H.E.H.); maite.cancelo@usc.es (M.C.)

Abstract: This study aims to investigate the impact of the banking sector on economic growth and commodity prices. Through panel data analysis, the research explores the relationship between the banking sector and economic growth in Spain, France, and Romania from 2000 to 2020. The findings reveal a positive correlation between the strength of the banking sector and economic growth across these nations, underscoring its pivotal role in fostering economic expansion and subsequently improving commodity prices. Additionally, this study evaluates various regulatory measures crucial ensuring the banking sector's sustainability and preventing financial crises, including credit risk management, lending policies, liquidity constraints, and international financing and investment strategies. By analyzing the interplay between regulatory measures and banking sector performance, incorporating variables such as non-performing loans, household debt, liquid liabilities, government consumption expenditure, foreign investments, and trade openness, this research provides policy-makers with valuable insights to formulate effective strategies for promoting economic stability and ensuring the sustainability and growth of the banking sector.

Keywords: banking sector; economic growth; commodity prices; financial sector development



Citation: Hamdaoui, H.E.; Cancelo, M. The Influence of the Banking Sector on Economic Growth and Commodity Prices: A Panel Data Analysis of Spain, France, and Romania. *Commodities* **2024**, *3*, 168–181. <https://doi.org/10.3390/commodities3020011>

Academic Editor: Jung-ho Baek

Received: 20 March 2024

Revised: 13 April 2024

Accepted: 18 April 2024

Published: 24 April 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The financial and banking sector is fundamental to every economy, serving as a cornerstone for funding economic activities and driving growth. Its evolution significantly influences the dynamics of commodity prices, impacting corporate investments and consumer spending, thus shaping market equilibrium and prices.

The advancement of the financial system is integral to bolstering investment, facilitating trade, and optimizing the allocation of resources, leading to accelerated economic growth [1]. The mobilization of international capital and the sophistication of financial systems are recognized as critical factors shaping economic growth trajectories [2].

As the financial sector expands in scale and complexity, it becomes a conduit through which various shocks—both positive and negative—are transmitted to influence not only output growth but also broader aspects of economic and political stability, along with the dynamics of commodity prices [3].

Banks make significant contributions to enhancing the socio-economic development of people in various ways. Moreover, the efficiency of a nation's banking sector is crucial to its economic development. Therefore, the development of the banking sector is instrumental in increasing the demand for goods and services, thus playing a pivotal role in sustaining national economic growth [4]. This makes it play a crucial role in facilitating access to funds by transferring surplus funds from depositors to investors who have promising projects but lack sufficient capital. This process generates income for banks, ensuring their profitability, including the growth of the banking sector, which is an essential element of the financial system [5].

However, with bank credit comes credit risk, as borrowers defaulting on their obligations can impact bank profits and credit quality, leading to an increase in non-performing loans [6]. Understanding the dynamics of commodity prices is crucial, as they are among the primary drivers of economic aggregates [7].

Eastern European countries have encountered numerous challenges in attaining genuine convergence in their GDP per capita compared to their EU counterparts [8]. Considering that the financial policies pursued in these countries over the past two decades have been somewhat analogous to those in Western European nations, it is notable that Eastern European countries have faced greater hurdles in achieving per capita GDP convergence due to similar economic conditions, fiscal policy adopting a convergent approach, initially relying on debt in the early 2000s, followed by the global financial crisis triggered by mortgage debt, and subsequent reforms, leading to a model emphasizing manufacturing, exports, and expansionary policies [9–12]. This serves as a primary motivation for our study, which seeks to investigate the influence of banking sector development on the per capita GDP in one of the Eastern European countries, alongside France and Spain, among other European Union countries. Subsequently, we aim to assess its implications for commodity prices. From these considerations, the following hypotheses emerge:

H1. *There is a positive correlation between banking sector development and economic growth.*

H2. *Economic growth, influenced by banking sector development, has a subsequent impact on commodity prices.*

To achieve this study's objectives and validate the hypotheses, we will proceed to address the central question regarding the extent of the banking sector's impact on economic growth and commodity prices. This process will follow a structured approach, commencing with a review of previous studies, followed by an exposition of this study's methodology and variables' definitions. Subsequently, we will present models outlining the relationship between the banking sector and economic growth, as well as the impact of the banking sector on commodity prices. Finally, we will conclude with insights and recommendations based on our findings.

2. Literature Review

Everybody knows that a healthy banking system is like the backbone of a thriving economy. Ref. [13] even highlights how good bank oversight keeps things humming along smoothly. That is exactly what we are looking at in this study: how much the banking sector greases the wheels of economic growth, and how that, in turn, affects the price of the things we buy every day. However, recent research by [2] presents a conflicting viewpoint, suggesting a potential negative link between advanced banking sectors and economic growth. This is attributed to the neglect of the agricultural sector and its adverse effects, with minimal impact on industrial growth. This underscores the need for a nuanced understanding of this relationship, considering the unique economic structures and financial policies of individual countries. Supporting this notion, Ref. [14] shed light on the variations in the banking sector's impact on economic growth across different countries.

Ref. [1] make a great point—focusing on long-term investments in the financial sector is key. Their research suggests that chasing quick wins can actually slow down economic growth in the long run. This aligns perfectly with our goal: figuring out how to make banks more sustainable, which ultimately helps the economy grow over time.

Ref. [15] offer a fresh perspective by exploring the connection between how developed banks are, how developed stock markets are, and economic growth. Their findings suggest that things can become complicated—sometimes too much emphasis on banks can even hurt growth! This offers another way to look at things alongside our data analysis to obtain a more complete picture.

The study by [5] confirms what many experts believe: profitable banks are a real boon for long-term economic growth. This aligns with our focus on finding ways to make banks perform better and stay stable. Interestingly, their work suggests that the amount of money that banks can lend might not be a huge factor. This makes us want to dig deeper into specific loan structures and how banks manage risks to avoid non-performing loans.

Ref. [16] take a broader look at things with their analysis. They found a moderate but positive link between how developed a financial system is and economic growth, which is what most experts believe. This reinforces the importance of a strong banking sector as a key part of a healthy financial system.

Research conducted by [17] shows how easily the banking sector is affected by negative changes in commodity prices. This confirms the need to adopt strategies that increase the ability of banks to deal with external fluctuations and crises. Moreover, Ref. [3] explain how bank loans affect commodity prices, especially in countries which export commodities. This is consistent with the aim of our study to explore the interconnection between the banking sector and the credit extended by banks with economic growth and commodity prices.

Ref. [4] investigate how the tools used to control money flow can impact economic growth. Their findings suggest that increasing the amount of money in circulation and the amount of credit given to private businesses can positively affect the economic growth per person. This aligns with our interest in exploring ways to stimulate growth without causing inflation.

By considering these different ideas and insights from previous studies, our research aims to provide a clear understanding of the complex relationship between banking, economic growth, and commodity prices in Spain, France, and Romania. The findings will give policymakers valuable knowledge to create effective strategies for promoting economic stability, ensuring a sustainable banking system, and fostering long-term economic growth.

3. Data and Sample

3.1. Research Model

This paper is divided into two sections: one section contains a model for the impact of the banking sector on economic growth, and the other focuses on the impact of the banking sector on commodity prices.

We utilized two panel data models, employing the Hausmann test in each model to discern the estimation method, whether it entailed cross-section fixed effects, random effects, or the ordinary least squares method [18]. However, we did not solely rely on the statistical aspect of the Hausmann test but also considered the economic perspective.

3.2. Data

This study aimed to analyze the impact of the banking sector on both economic growth and commodity prices, with the goal of enhancing economic growth and individual economic welfare, and, consequently, commodity prices in the future. We focused our study on three countries (Spain, France, and Romania).

France, Spain, and Romania were selected to study the impact of the banking sector on economic growth and commodity prices, ensuring that this study was not one-sided. These countries are characterized by geographical and economic diversity: that is, they have different economic categories. They are also considered significant economies within the European Union, undergoing continuous economic transformations and developments in the banking sector. Additionally, these countries provide sufficient and accessible data, facilitating the necessary research and analysis.

3.3. Analysis Method: Panel Data

This study explored the impact of the banking sector on economic growth in Spain, France, and Romania, using time series data from 2000 to 2020. The dependent variable in the analysis was the (GDP) per capita [19], and a panel data model was utilized for the investigation [17]. The data were sourced from the World Bank and Trading Economics.

3.4. Variables

To investigate the link between the banking sector and economic growth, we adopted a panel data model where the per capita share of economic growth was treated as the dependent variable [19], while financial development variables served as the independent variables [8], as depicted in Tables 1 and 2.

Table 1. Dependent and independent variables for the effect on economic growth.

Dependent Variable		
GDPC	GDP per capita growth (annual %)	World Bank
Independent Variables		
GDPG	GDP growth (annual %)	World Bank
LQL	Liquid liability to GDP (broad money)	tradingeconomics.com https://tradingeconomics.com/spain/liquid-liabilities-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/romania/liquid-liabilities-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/france/liquid-liabilities-to-gdp-percent-wb-data.html accessed on 18 February 2024
BD	Bank deposits to GDP	tradingeconomics.com https://tradingeconomics.com/spain/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/romania/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/france/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024
LSTMC	Stock market capitalization to GDP (size of the financial sector) (logarithm)	World Bank
HD	Household debt, consolidated including non-profit institutions serving households	tradingeconomics.com https://tradingeconomics.com/spain/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024 https://tradingeconomics.com/romania/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024 https://tradingeconomics.com/france/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024
LGVE	General Government Final Consumption Expenditure (% of GDP) (logarithm)	tradingeconomics.com https://tradingeconomics.com/spain/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024 https://tradingeconomics.com/romania/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024 https://tradingeconomics.com/france/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024

Table 1. Cont.

Dependent Variable		
LRDE	Research and development expenditure (% of GDP) (logarithm)	World Bank
TOP	Trade as a share of GDP, 2000 to 2020. This is also known as the “trade openness index”	ourworldindata.org Trade as a share of GDP, 1960 to 2021 (ourworldindata.org) accessed on 19 February 2024
HC	School enrolment, secondary (% gross) (human capital)	World Bank
INFL	Inflation, consumer prices (annual %)	World Bank
DCRP	Domestic credit to private sector by banks (% of GDP)	World Bank
LTRD	Trade to GDP (logarithm)	World Bank
BPER	Banking performance (return on equity/return on assets)	Authors’ calculation using World Bank
INFL	Non-performing loans	World Bank
DINVES	Gross domestic investment of GDP	World Bank
FINVS	Foreign direct investment, net inflows (% of GDP)	tradingeconomics.com https://tradingeconomics.com/spain/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024 https://tradingeconomics.com/romania/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024 https://tradingeconomics.com/france/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024
BNIM	Bank net interest margin	World Bank

As for the second model, commodity prices were the dependent variable, and the financial development variables were the independent variables [3], with the deletion of some variables which did not affect commodity prices and had no role in the model, as Table 3 shows.

3.5. The First Model: The Impact of Financial Sector Development on Economic Growth

The model is represented as follows:

$$\text{GROWTH}_{i,t} = \alpha_i + \beta_i[\text{FINANCE}]_{i,t} + u_i + \varepsilon_{i,t}$$

where y is the real GDP per capita, FINANCE Development is the independent variable, u_i and $\varepsilon_{i,t}$ are the error terms, i (where $i = 1, 2, \dots, N$) is the observational unit (country), and t (where $t = 1, 2, \dots, T$) is the time period. In this equation, ε represents a white noise error with a zero mean, and u denotes a country-specific component of the error term, which may not necessarily have a zero mean. The parameter α_i represents the country-specific intercept, which could vary across different countries.

In our analysis, we had several variables, the most important of which were the credit-to-GDP ratio [1] and the bank deposits to the GDP [15] as a measure of financial depth and banking development. In the same context, we had non-performing loans [20], representing the credit risk in the banking sector. Additionally, we had variables such as trade to the GDP [15] and trade openness [21] to represent the commercial volume and exports and imports in the economy. Bored money represented the liquidity in the financial sector [4]. Bank performance [22] and stock market capitalization to the GDP represented the size of the banking sector [8]. We also had indicators of financial system efficiency and

competitiveness, such as net interest margin [5]. Finally, we also had indicators measuring the size of investments, both domestic [23] and foreign [15], along with consumer prices' inflation [4] and human capital measured by school enrolment, secondary gross % [22]. Additionally, variables such as general government consumption and expenditure [19] and research and development expenditure to the GDP [24] were included to measure government spending as a percentage of economic growth with GDP growth [21].

The model that expresses the extent of the banking sector's influence on economic growth is as follows:

$$RGDPC_{i,t} = \alpha_i + \beta_1 FINV_{i,t} + \beta_2 TOP_{i,t} + \beta_3 INFL_{i,t} + \beta_4 LGVE_{i,t} + \beta_5 HC_{i,t} + \beta_6 DCRP_{i,t} + \beta_7 STMC_{i,t} + \beta_8 BD_{i,t} + \beta_9 BNIM_{i,t} + \beta_{10} HD_{i,t} + \beta_{11} BPER_{i,t} + \beta_{12} DINVES_{i,t} + \beta_{13} GDPG_{i,t} + \beta_{14} NPL_{i,t} + \beta_{15} LQL_{i,t} + \beta_{16} LRDE_{i,t} + \beta_{17} LTRD_{i,t} + u_i + \varepsilon_{i,t}$$

Based on the result of the Hausman test, which indicated a 0.0000 variance in the random effects for the estimated period, we realized that the random effect model may not be suitable for this type of dataset. Therefore, it is recommended to utilize the fixed effect model to yield the most accurate results. Since the results were statistically and economically acceptable, we relied on the fixed effect model in our analysis.

Table 2. Panel data result for the banking sector's influence on economic growth.

Dependent Variable: GDPC GDP per Capita Growth (Annual %)	Fixed		Random	
	Explanatory Variable	Coeff.	p-Val.	Coeff.
BD (bank deposits to GDP)	0.082940	* 0.0029	0.015030	0.3611
BNIM (bank net interest margin)	−0.077709	0.5782	0.140950	0.7596
BPER banking performance ROE/ROA	−0.000151	0.9824	−0.007360	0.9913
DCRP (domestic credit to private sector by banks (% of GDP))	0.027118	* 0.0057	0.014149	0.4635
DINVES (domestic investment of GDP)	−0.025643	0.5453	−0.036102	0.9731
FINVS (foreign direct investment (% of GDP))	−0.133307	** 0.0243	−0.077729	0.9744
GDPG (GDP growth (annual %))	1.125196	* 0.0000	1.070569	0.5230
LGVE (general government final consumption expenditure (% of GDP))	3.584593	0.1277	4.121958	0.4678
HC (human capital)	0.058870	* 0.0100	−0.017258	*** 0.0518
HD (household debt)	−0.077470	* 0.0086	−0.033950	0.1764
INFL (inflation, consumer prices (annual %))	−0.002836	0.9572	−0.067277	0.9062
NPL (non-performing loans)	−0.083466	** 0.0161	−0.000000	0.8863
LQL liquid liability to GDP (broad money)	-6.23×10^{-8}	0.2150	0.028144	0.4555
LRDE research and development expenditure (% of GDP) logarithm	0.329394	0.7520	−0.970428	0.8893
LSTMC (stock market capitalization to GDP—logarithm)	−0.108893	0.8055	−0.662025	0.1189
TOP (trade openness)	−0.345521	* 0.0076	−0.372237	*** 0.0761
LTRD (trade to GDP)	23.03118	** 0.0330	23.814662	*** 0.0739
C	−92.69664	0.0216	−12.46374	0.7846
R-squared		0.997826		0.994850
Adjusted R-squared		0.994139		0.987228
Durbin–Watson stat		1.970907		1.317301
Hausman test				0.0000

*** The coefficients at the 10 percent level are significant; ** the coefficients at the 5 percent level are significant; and * the coefficients at the 1 percent level are significant. Source: authors' calculation with EViews9.

We also noted that R-squared and Adjusted R-squared equaled 0.99%. We also saw that Durbin–Watson converged to a value of 2, which meant that there were no problems with correlation.

The incorporation of cross-section fixed effects (dummy variables) and period fixed effects in panel data analysis is crucial for obtaining precise and dependable results. These variables aid in controlling for individual characteristics and time-specific factors, respectively, ensuring unbiased estimates of the relationship between variables.

This study uncovered several positive relationships between components of the financial sector and economic growth in Spain, France, and Romania. It indicated that bank deposits to the GDP, domestic credit to the private sector by banks of the GDP, and trade to the GDP as well as GDP growth positively impacted the GDP per capita. Moreover, human capital contributed positively to economic growth.

Conversely, our analysis suggested negative relationships between certain components of the financial sector and economic growth in the examined countries. Non-performing loans and foreign direct investment, alongside household debt and trade openness, appeared to dampen economic growth, thereby affecting the per capita GDP negatively.

Some variables were statistically insignificant in the model, despite their economic significance. These included general government final consumption expenditure, inflation, broad money, research and development expenditure, and stock market capitalization. Although they did not exhibit a statistically significant effect in the model, they still hold economic importance and influence.

3.6. The Second Model: The Impact of Financial Sector Development on Commodity Price

The model is represented as follows:

$$\text{COMMODITIES_PRICE}_{i,t} = \alpha_i + \beta_i[\text{FINANCE}]_{i,t} + u_i + \varepsilon_{i,t}$$

As was the case with the first model, we relied on the same model and the same steps by adopting commodity prices as the dependent variable [3] and financial development variables as the independent variables, while excluding some variables which had no effect in the model, such as human capital and research and development expenditure, and variables which had an economic impact but were statistically detrimental to the model, such as trade to the GDP, as Table 3 shows.

Thus, the equation after adding the variables that had a clear effect on the model was as follows:

$$\begin{aligned} \text{RGDPC}_{i,t} = & \alpha_i + \beta_1 \text{FINV}_{i,t} + \beta_2 \text{TOP}_{i,t} + \beta_3 \text{INFL}_{i,t} + \beta_4 \text{LGVE}_{i,t} \\ & + \beta_5 \text{DCRP}_{i,t} + \beta_6 \text{STMC}_{i,t} + \beta_7 \text{BD}_{i,t} + \beta_8 \text{BNIM}_{i,t} + \beta_9 \text{HD}_{i,t} + \beta_{10} \text{BPER}_{i,t} + \beta_{11} \text{DINVES}_{i,t} \\ & + \beta_{12} \text{GDPG}_{i,t} + \beta_{13} \text{NPL}_{i,t} + \beta_{14} \text{LQL}_{i,t} + u_i + \varepsilon_{i,t} \end{aligned}$$

After conducting the Hausman test, we found that the test statistic indicated a value of 0.0004, meaning that the fixed effect model was statistically superior. Additionally, the Durbin–Watson statistic in the fixed effect model was approximately 1.85, close to the value of 2, indicating no issues with autocorrelation. However, despite the preference for the Hausman test for the fixed effect approach, we chose to use the random effect model. The reason for this decision is that the Hausman test does not always have the final decision to reject the null hypothesis in favor of the random effect [25], and it does not solely determine the most suitable method, especially since we only had three countries in our study [26]. Therefore, the random effect approach would not have been rejected. Our decision was reached after a careful analysis of the data and the availability of statistical evidence supporting this choice. The results in the Table 4 indicated that the model using random effects provided a better explanation for the data changes and allowed for the efficient estimation of the average effects of independent variables across individuals. Additionally, using random effects reflected the theoretical assumptions of our longitudinal data model more accurately, assuming that individual effects were random and unrelated to the independent variables.

Table 3. Dependent and independent variables for the effect on commodities' price.

Dependent Variable		
CP	Commodities' Price	World Bank
Independent Variables		
GDPG	GDP growth (annual %)	World Bank
BD	Bank deposits to GDP	tradingeconomics.com https://tradingeconomics.com/spain/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/romania/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024 https://tradingeconomics.com/france/bank-deposits-to-gdp-percent-wb-data.html accessed on 18 February 2024
STMC	Stock market capitalization to GDP (Size of the financial sector)	World Bank
HD	Household debt, consolidated including non-profit institutions serving households	tradingeconomics.com https://tradingeconomics.com/spain/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024 https://tradingeconomics.com/romania/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024 https://tradingeconomics.com/france/household-debt-consolidated-including-non-profit-institutions-serving-households-eurostat-data.html accessed on 19 February 2024
GVE	General government final consumption expenditure (% Of GDP)	tradingeconomics.com https://tradingeconomics.com/spain/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024 https://tradingeconomics.com/romania/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024 https://tradingeconomics.com/france/general-government-final-consumption-expenditure-percent-of-gdp-wb-data.html accessed on 19 February 2024
RDE	Research and development expenditure (% of GDP)	World Bank
TOP	Trade as a share of GDP, 2000 to 2020. This is also known as the "trade openness index"	ourworldindata.org Trade as a share of GDP, 1960 to 2021 (ourworldindata.org) accessed on 19 February 2024
INFL	Inflation, consumer prices (annual %)	World Bank
DCRP	Domestic credit to private sector by banks (% of GDP)	World Bank
BPER	Banking performance (return on equity / return on assets)	Authors' calculation using World Bank data
LNPL	Non-performing loans (logarithm)	World Bank
DINVS	Gross domestic investment of GDP	World Bank

Table 3. Cont.

Dependent Variable		
FINVS	Foreign direct investment, net inflows (% of GDP)	tradingeconomics.com https://tradingeconomics.com/spain/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024 https://tradingeconomics.com/romania/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024 https://tradingeconomics.com/france/foreign-direct-investment-net-inflows-percent-of-gdp-wb-data.html accessed on 20 February 2024
BNIM	Bank net interest margin	World Bank

Table 4. Panel data result for the banking sector's influence on commodity process. Method fixed: panel least squares cross-section fixed (dummy variables), period fixed (dummy variables). Method random: panel EGLS (period random effects), period random, idiosyncratic random.

Dependent Variable: Commodities' Price	Fixed		Random		
	Explanatory Variable	Coeff.	p-Val.	Coeff.	p-Val.
BD (bank deposits to GDP)		−0.435539	* 0.0066	−0.410424	0.6833
BNIM (bank net interest margin)		−2.912191	* 0.0054	−1.194701	*** 0.0916
BPER banking performance ROE/ROA		0.001995	0.9691	0.008602	0.8107
DCRP (domestic credit to private sector by banks (% of GDP))		−0.103056	0.1255	−0.169211	* 0.0014
DINVES (domestic investment of GDP)		0.149490	0.6455	0.716823	*0.0008
FINVS (foreign direct investment (% of GDP))		−0.288732	0.4963	−0.675700	** 0.0359
GDPG (GDP growth (annual %))		−0.121067	0.6000	−0.484147	* 0.0051
GVE (general government final consumption expenditure (% Of GDP))		0.958586	0.2741	3.198555	* 0.0000
HD (household debt)		0.408784	** 0.0473	0.545878	* 0.0000
INFL (inflation, consumer prices (annual %))		−0.443537	** 0.0207	−0.777989	* 0.0000
LNPL (non-performing loans, in logarithm)		3.761645	* 0.0054	2.287941	* 0.0107
RDE research and development expenditure (% of GDP)		−7.140182	0.3607	−11.90598	* 0.0003
STMC (stock market capitalization to GDP)		0.018506	0.5597	−0.023928	0.2291
TOP (trade openness)		0.829135	* 0.0008	1.099456	* 0.0000
C		55.11428	0.1184	−36.47801	** 0.0125
R-squared			0.992177		0.975923
Adjusted R-squared			0.981346		0.968900
Durbin–Watson stat			1.854394		1.448240
Hausman test					0.0004

*** The coefficients at the 10 percent level are significant; ** the coefficients at the 5 percent level are significant; and * the coefficients at the 1 percent level are significant. Source: authors' calculation with EViews9.

We observed that the bank net interest margin had an inverse relationship with the prices, where an increase led to a decrease in prices. This is achieved by providing low-cost financing to companies and individuals, stimulating productivity, reducing production costs, and enhancing purchasing power.

Similarly, domestic credit to the private sector by banks also had an inverse relationship with the prices, where an increase resulted in lower prices. This is due to increased production and improved demand for products and services, which increases supply and puts a downward pressure on prices.

Foreign direct investment also had an inverse relationship with the prices, aiding in their reduction through increased productivity and infrastructure development, which generally lower production costs and increase supply, leading to greater market competitiveness and downward pressure on prices.

GDP growth also led to lower prices, as increased production and personal income usually enhance consumer purchasing power, leading to increased supply and improved production efficiency.

There was also an inverse relationship between inflation, consumer prices, and commodity prices, meaning that an increase in inflation is usually accompanied by a decrease in commodity prices. This can be explained economically as an increase in commodity price inflation leading to higher production and distribution costs, reducing consumers' purchasing power and demand for goods, thus resulting in lower commodity prices.

Research and development expenditure also affected commodity prices negatively, as increased government spending on research and development generally leads to lower commodity prices by improving efficiency, productivity, and technology, resulting in lower-cost products for consumers and increased market competitiveness.

As for the variables which affected the rise in prices, we noted the following:

Increased local investment can lead to higher production costs and increased demand for resources and services, which is reflected in the final production costs.

Government spending on infrastructure and public services may increase the demand for resources and services, leading to increased competition and price hikes.

Increasing household debt can raise the overall demand for goods and services, thus raising prices.

Non-performing loans may restrict banks from granting new loans, increasing borrowing costs and ultimately leading to higher prices.

Trade openness can raise production or transportation costs, which may be reflected in the final prices of goods.

The effect of variables such as bank deposits, bank performance (ROE/ROA), and stock market capitalization on commodity prices was not well defined in the model, despite their potential importance. These variables affect the economy through their impact on investment, market confidence, and the availability of financing: that is, they have an economic impact, so they were left in the model so as not to spoil it.

4. Result

This study dove deep into the complex relationship between the banking sector and two key economic indicators: economic growth and commodity prices. We all know banks play a huge role in shaping how economies function, so we wanted to see how they influence these vital aspects in Spain, France, and Romania.

To obtain a clear picture, we used a powerful method called panel data analysis. Briefly, we gathered and analyzed a lot of data from 2000 to 2020, which allowed us to examine the connections between these factors over time. This approach helped us see both the short-term ups and downs and the long-term trends.

The analysis revealed multifaceted relationships between various components of the banking sector and economic growth. Bank deposits to the GDP, domestic credit to the private sector by banks of the GDP, trade to the GDP, and GDP growth emerged as significant drivers of economic expansion, positively influencing the GDP per capita and the overall growth trajectories. However, certain factors such as non-performing loans, foreign direct investment, household debt, and trade openness exerted adverse effects on economic growth, dampening the per capita GDP and posing challenges to sustainable development.

Previous studies have offered further insights into the relationship between the banking sector and economic growth. For example, Ref. [22] identified a significant and positive impact of human capital, investment, and trade openness on economic growth, which aligns with our findings regarding human capital. Conversely, Ref. [27] observed a short-term

negative relationship between bank deposits, private investment, and economic growth, consistent with our findings on bank deposits. Additionally, Ref. [28] found a significant and positive relationship between trade openness and economic growth, contrary to our findings. These results prove the validity of the first hypothesis, according to which the quality of the banking sector positively affects economic growth.

The studies conducted by [1,4,29] highlighted the positive effects of financial development, market capitalization, and final consumption expenditure on economic growth, consistent with our results. However, Refs. [30,31] reported rare findings indicating a negative relationship between the banking sector and economic growth.

Furthermore, Refs. [19,22] pointed out the negative effects of government expenditure on GDP growth, while Refs. [22,23] emphasized the positive impacts of trade openness and domestic investment on economic growth, respectively. Finally, Ref. [32] shed light on the negative impact of non-performing loans on both the banking sector and economic growth, consistent with our findings.

By incorporating findings from various studies, it becomes evident that the relationship between the banking sector and economic growth is complex and multifaceted, influenced by numerous factors including trade openness, financial development, government expenditure, and domestic investment. This comprehensive understanding underscores the importance of considering various dimensions when analyzing the impact of the banking sector on economic growth.

Previous studies provide additional insights into the correlation between the banking sector and commodity prices. For instance, Ref. [3] noted that, as banks increase lending, commodity prices rise, while an uptick in non-performing loans leads to fewer loan approvals, echoing our findings on the NPL. Ref. [7] highlighted the reciprocal relationship between banking crises and commodity prices.

Moreover, Ref. [33] observed that an expanding credit volume leads to price hikes. Ref. [17] indicated that banking crises and non-performing loans contribute to price surges, whereas banking sector development drives price declines, consistent with our results. This also proves the validity of the second hypothesis, according to which commodity prices are affected by the quality of the banking sector. Ref. [34] identified a positive link between GDP growth and price escalation, as well as between commodity price increases and economic growth, in contrast with our study, where economic growth and increased GDP help reduce prices.

Furthermore, Ref. [35] found a positive association between commodity prices and net interest margin, although our findings suggest that an increase in the net interest margin aids in price reduction. Ref. [36] suggested that investing in commodities, particularly during crises, serves as a hedge against stock market volatility and downturns, aligning with our findings on investments. Alvarado, Ref. [37] concluded that foreign direct investment has a minimal impact on commodity prices and economic growth, while Ref. [38] emphasized the role of government spending in controlling commodity prices by offsetting the taxes imposed on food items, although our results indicate that government spending leads to increased commodity prices.

Similarly, the influence of the banking sector on commodity prices is significant and complex. Bank net interest margin and domestic credit to the private sector by banks demonstrated inverse relationships with prices, indicating that increased banking activity results in price reduction through enhanced productivity, decreased production costs, and increased purchasing power. Conversely, factors such as inflation, non-performing loans, and trade openness exerted upward pressure on commodity prices, illustrating the intricacies of market dynamics.

By incorporating findings from various studies, it also becomes evident that the relationship between the banking sector and commodity prices is intricate and influenced by various factors including lending behavior, non-performing loans, banking crises, GDP growth, foreign direct investment, and government spending. This comprehensive understanding underscores the importance of considering multiple dimensions when analyzing

the impact of the banking sector on commodity prices. This study's findings underscore the intricate interplay between the banking sector, economic growth, and commodity prices. It prompts a nuanced discussion on the broader implications of these relationships, including their alignment with the existing literature, policy implications, and potential challenges. By critically examining the findings in light of theoretical frameworks and empirical evidence, this study contributes valuable insights to the ongoing discourse on economic development and financial stability.

In light of these complexities and considerations, this research is a valuable contribution to understanding the relationship between the banking sector, economic growth, and commodity prices and how the authorities are able to influence both economic growth and commodity prices by imposing some decisions and policies such as, for example, lending policies which are expansionary or contractionary as needed.

Hence, we hope that this study not only helps to enrich the academic aspect of this topic but also helps the authorities on how to develop policies related to the banking sector, which, in turn, would affect economic growth, including commodity prices, and the sustainability of the banking sector. While our study was comprehensive in terms of the relationship between the banking sector, economic growth, and commodity prices, it did not address the real impact of the crises on the banking sector and economic growth and hence on commodity prices. This is what we hope to study in the future, as we aim to bring together the COVID crisis, the Russia–Ukraine war, the repercussions of these crises on the banking sector and commodity prices in Romania, France, and Spain, and how to deal with the current situation. Thus, this future study's factors will become clearer after their integration and interaction with the elements in our model, and this will allow us to provide a comprehensive explanation and understanding of the topic.

In conclusion, this study emphasizes the indispensable role of the banking sector in shaping economic outcomes and commodity price dynamics. It calls for proactive regulatory measures to ensure the stability and resilience of the banking sector, thereby safeguarding economic growth and price stability. Furthermore, this study advocates for further research exploring the nuanced mechanisms underlying the identified relationships and recommends policy interventions aimed at fostering sustainable economic development and mitigating systemic risks.

Author Contributions: Conceptualization, H.E.H. and M.C.; Methodology, H.E.H. and M.C.; Software, H.E.H. and M.C.; Validation, M.C.; Formal analysis, H.E.H. and M.C.; Resources, H.E.H. and M.C.; Data curation, H.E.H.; Writing—original draft, H.E.H. and M.C.; Writing—review & editing, M.C.; Supervision, M.C. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The authors are willing to share the data in an Excel format with those who wish to replicate the results of this study.

Acknowledgments: We are very grateful to the reviewers for their comprehensive review and valuable comments on the first version of the article, which greatly improved the work and revealed future prospects which we are about to begin working on. We take full responsibility for any errors that may still exist.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Adekunle, O.A.; Salami, G.O.; Oluseyi, A.A. Impact of financial sector development on the Nigerian economic growth. *Am. J. Bus. Manag.* **2013**, *2*, 347–356.
2. Tongurai, J.; Vithessonthi, C. The impact of the banking sector on economic structure and growth. *Int. Rev. Financ. Anal.* **2018**, *56*, 193–207. [[CrossRef](#)]
3. Agarwal, I.; Duttagupta, R.; Presbitero, A.F. Commodity prices and bank lending. *Econ. Inq.* **2020**, *58*, 953–979. [[CrossRef](#)]

4. Haralayya, B.; Aithal, P.S. Implications of banking sector on economic development in India. *Georg. Wash. Int. Law Rev.* **2021**, *7*, 631–642.
5. Alam, M.S.; Rabbani, M.R.; Tausif, M.R.; Abey, J. Banks' performance and economic growth in India: A panel cointegration analysis. *Economies* **2021**, *9*, 38. [[CrossRef](#)]
6. Harun, U. Pengaruh rasio-rasio keuangan car, ldr, nim, bopo, npl terhadap roa. *J. Ris. Bisnis Dan Manaj.* **2016**, *4*, 67–82.
7. Eberhardt, M.; Presbitero, A.F. Commodity prices and banking crises. *J. Int. Econ.* **2021**, *131*, 103474. [[CrossRef](#)]
8. Caporale, G.M.; Rault, C.; Sova, A.D.; Sova, R. Financial development and economic growth: Evidence from 10 new European Union members. *Int. J. Financ. Econ.* **2015**, *20*, 48–60. [[CrossRef](#)]
9. Febrero, E. The changing growth pattern in the Spanish economy driven by the Eurosystem: From poor supervision to conditionality on the provision of Central bank reserves. *Bull. Political Econ.* **2021**, *14*, 179–201.
10. Blot, C.; Hubert, P. Une analyse de la contribution de la politique monétaire à la croissance économique. *Rev. l'OFCE* **2018**, *5*, 231–254. [[CrossRef](#)]
11. Gherman, A.M.; Ștefan, G. Între disciplină bugetară și relansare economică. Problema soluțiilor. *Econ. Teor. Apl.* **2013**, *XX*, 90–108.
12. Milea, C. Some directions of action in the management of public debt meant to minimize the risks of a debt crisis In Romania. In Proceedings of the 4th Economic International Conference on Competitiveness and Sustainable Development, Chișinău, Moldova, 3–4 November 2022; pp. 219–223.
13. Neanidis, C.K. Volatile capital flows and economic growth: The role of banking supervision. *J. Financ. Stab.* **2019**, *40*, 77–93. [[CrossRef](#)]
14. Mhadhbi, K.; Terzi, C.; Bouchrika, A. Banking sector development and economic growth in developing countries: A bootstrap panel Granger causality analysis. *Empir. Econ.* **2020**, *58*, 2817–2836. [[CrossRef](#)]
15. Cave, J.; Chaudhuri, K.; Kumbhakar, S.C. Do banking sector and stock market development matter for economic growth? *Empir. Econ.* **2020**, *59*, 1513–1535. [[CrossRef](#)]
16. Valickova, P.; Havranek, T.; Horvath, R. Financial development and economic growth: A meta-analysis. *J. Econ. Surv.* **2015**, *29*, 506–526. [[CrossRef](#)]
17. Kinda, T.; Mlachila, M.; Ouedraogo, R. Do commodity price shocks weaken the financial sector? *World Econ.* **2018**, *41*, 3001–3044. [[CrossRef](#)]
18. Torres-Reyna, O. Panel Data Analysis: Fixed and Random Effects Using STATA (v 4.2). Princeton University. 2007. Available online: <https://dss.princeton.edu/training> (accessed on 15 September 2018).
19. Hassan, M.K.; Sanchez, B.; Yu, J. Financial development and economic growth: New evidence from panel data. *Q. Rev. Econ. Financ.* **2011**, *51*, 88–104. [[CrossRef](#)]
20. Erdoğdu, A. Assessing the impact of non-performing loans on economic growth in Turkey. *Am. Res. J. Bus. Manag.* **2016**, *2016*, 1–8.
21. Ghosh, A. How does banking sector globalization affect economic growth? *Int. Rev. Econ. Financ.* **2017**, *48*, 83–97. [[CrossRef](#)]
22. Zeqiraj, V.; Hammoudeh, S.; Iskenderoglu, O.; Tiwari, A.K. Banking sector performance and economic growth: Evidence from Southeast European countries. *Post-Communist Econ.* **2020**, *32*, 267–284. [[CrossRef](#)]
23. Shabbir, M.S.; Bashir, M.; Abbasi, H.M.; Yahya, G.; Abbasi, B.A. Effect of domestic and foreign private investment on economic growth of Pakistan. *Transnatl. Corp. Rev.* **2020**, *13*, 437–449. [[CrossRef](#)]
24. Wang, Q.; Zhang, F. Does increasing investment in research and development promote economic growth decoupling from carbon emission growth? An empirical analysis of BRICS countries. *J. Clean. Prod.* **2020**, *252*, 119853. [[CrossRef](#)]
25. Sheytanova, T. *The Accuracy of the Hausman Test in Panel Data: A Monte Carlo Study*; Örebro University: Örebro, Sweden, 2015.
26. Granados, R.M. *Test de Hausman*; Universidad De Granada: Granada, Spain, 2005.
27. Puatwoe, J.T.; Piabuo, S.M. Financial sector development and economic growth: Evidence from Cameroon. *Financ. Innov.* **2017**, *3*, 25. [[CrossRef](#)]
28. Raghutla, C. The effect of trade openness on economic growth: Some empirical evidence from emerging market economies. *J. Public Aff.* **2020**, *20*, e2081. [[CrossRef](#)]
29. Asteriou, D.; Spanos, K. The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Financ. Res. Lett.* **2019**, *28*, 238–245. [[CrossRef](#)]
30. Ductor, L.; Grechyna, D. Financial development, real sector, and economic growth. *Int. Rev. Econ. Financ.* **2015**, *37*, 393–405. [[CrossRef](#)]
31. Musta, E.; Lector, C.; Universiteti, S.; Barleti, M. Financial Development Influence on Economic Growth in Albania. *Eur. J. Econ. Bus. Stud.* **2016**, *2*, 59–65. [[CrossRef](#)]
32. Erdogan, M.; Aksoy, E.E. Banking Regulation and Determinants of Banks Profits: Empirical Evidence from Turkey. *Eurasian J. Bus. Econ.* **2016**, *9*, 109–124. [[CrossRef](#)]
33. Kablan, S.; Ftiti, Z.; Guesmi, K. Commodity price cycles and financial pressures in African commodities exporters. *Emerg. Mark. Rev.* **2017**, *30*, 215–231. [[CrossRef](#)]
34. Tahar, M.B.; Slimane, S.B.; Houfi, M.A. Commodity prices and economic growth in commodity-dependent countries: New evidence from nonlinear and asymmetric analysis. *Resour. Policy* **2021**, *72*, 102043. [[CrossRef](#)]
35. Yanikkaya, H.; Gumus, N.; Pabuccu, Y.U. How profitability differs between conventional and Islamic banks: A dynamic panel data approach. *Pac. Basin Financ. J.* **2018**, *48*, 99–111. [[CrossRef](#)]

36. Salisu, A.A.; Akanni, L.; Raheem, I. The COVID-19 global fear index and the predictability of commodity price returns. *J. Behav. Exp. Financ.* **2020**, *27*, 100383. [[CrossRef](#)] [[PubMed](#)]
37. Alvarado, R.; Iñiguez, M.; Ponce, P. Foreign direct investment and economic growth in Latin America. *Econ. Anal. Policy* **2017**, *56*, 176–187. [[CrossRef](#)]
38. Springmann, M.; Mason-D'croz, D.; Robinson, S.; Wiebe, K.; Godfray, H.C.J.; Rayner, M.; Scarborough, P. Mitigation potential and global health impacts from emissions pricing of food commodities. *Nat. Clim. Chang.* **2016**, *7*, 69–74. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.