

The 7th International Conference on Economics and Social Sciences
Exploring Global Perspectives:
The Future of Economics and Social Sciences
June 13-14, 2024
Bucharest University of Economic Studies, Romania

**The Governance Profile of European Countries
and Key Banking Indicators – A Causality Analysis**

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DOI: 10.24818/ICISS/2024/053

Abstract

The study documents a significant relationship in terms of causality between country-level governance indicators (as a component of ESG) and main banking system indicators by relying on a sample of European Union countries that exhibit a temperate climate profile. Granger causality test is used to assess the link between banking system and country governance, in terms of a cause-effect framework. The findings show that the influence of country governance performance on banking activity is most pronounced in Belgium, Portugal, and Spain while in the Netherlands, France, Greece, and Italy the interplay is relatively balanced. Banking system indicators that appear to precede changes in governance ones in most countries are related to bank credit to bank deposits, bank deposits to GDP, and bank non-performing loans to gross loans. Bilateral causality is present mostly in Greece and Spain, the control of corruption and bank non-performing loans being the variables most often included in the causal link.

Keywords: ESG, governance, banking system, causality analysis.

JEL Classification: C10, G21, G38.

1. Introduction

Since the founding of the United Nations (UN) in 1945, it has sponsored and created several global initiatives related to social, economic, and environmental issues. According to Thérien (2006), the 1990s witnessed the most notable changes in UN practices related to economic and social issues. Consequently, the UN laid the basis for the first initiative to create the term ESG in 1999. After the launch of the UN Global Compact, the need for more harmonising efforts has increased, which is why the UN invited the world's leading financial institutions in 2004 to join

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the new initiative “Who Cares Wins”. Under the aegis of this initiative, a report was published using the new term ESG, in addition to substantiating several recommendations for policymakers and financial practitioners (Pollman, 2022). Later, many other initiatives aimed to provide more opportunities for asset managers and investors to increase their understanding of the concept and risks of ESG, leading to the integration of ESG with investment decisions and the implementation of ESG issues in the functioning of financial markets (IFC, 2004). But that was not sufficient; there was an increasingly greater need to raise awareness of the risks of ESG.

The official discourse around ESG focusses not only on the proper classification of ESG factors, but also on pointing out the exposure to a new category of risk, namely the ESG risks.

In this respect, the European Banking Authority is defining ESG risks as the risks that stem from any negative (current or prospective) impact of the ESG factors on the financial institutions by affecting counterparties or invested assets, which will further impact the financial performance, liquidity, or solvency of the individual financial entity. Consequently, the occurrence of ESG risks through core financial institution activities overlaps the traditional categories of financial risks; therefore, ESG risks, from a prudential perspective, represent the negative materialisation of ESG factors (EBA, 2021b).

The focus of this paper is on the governance dimension of the ESG concept, to reveal whether there is a causal relationship between good governance in a country and selected key banking indicators. When considering country-level governance indicators, we followed the acceptance provided by the European Banking Authority: Governance risks are mostly related to the financial impacts of fraud, bribery, corruption, or poor executive leadership (EBA, 2021a). This definition is complemented by the one proposed by the International Finance Corporation (Valcin et al., 2021) for the governance component of the ESG: it refers to the structure and processes of corporate governance, which guide, control, and adjust the company’s activity (e.g., risk management framework, board composition and structure, internal code of ethical conduct), including specific governance procedures for the implementation of basic social and environmental policies.

The analysis carried out in this article delineates the existing literature in several ways. First, the objective of the research is to validate the presence of a causal relationship between the main country-level institutional indicators (governance) and the key indicators of the banking system that account for bank competition, profitability, operational efficiency, liquidity, capitalisation, quality of the loan portfolio, and size of the banking sector from the standpoint of deposits collected (the deposit growth). This approach is meant to show whether the governance environment in the home country determines the development of banking activity, or vice versa. Second, we conduct a country-level granular analysis considering a selection of European countries. The sample is chosen based on the climatic profile of the countries designated by the World Bank sovereign ESG data portal. In particular, we envisaged only European countries that were included in the category of a temperate profile. Our choice is substantiated in the findings of

a European Commission (2008) report stating that climate challenges are not evenly distributed across European countries and that some particular regions appear to be more exposed to this asymmetric impact. By considering only the temperate-climate countries, we account for a homogeneous sample and increase the comparability of the results among them.

The structure of the paper is as follows: the second section overviews existing related research, the third one describes the range of variables employed, the fourth section presents the findings of the Granger causality test, and the last one concludes.

2. Literature Review

In recent years, the global interest in the ESG criteria has increased. This considerable attention was based in part on three main factors:

- the findings of recent studies / analyses / reports belonging to researchers and the financial industry suggest that investing in ESG activates suitable development conditions, being able to improve several indicators such as returns and better risk management;
- the social attention: growing awareness of the risks related to climate change, the benefits of responsible investments, the growing need for diversity in the board and workplace, assuming that social values will lead to a positive impact on company performance;
- the sustainability perspective: many financial institutions nowadays target a longer-term perspective, and move away from a short-term one in terms of envisaged returns and risk appetite, which reflect a pattern of sustainability embedded into the conduct of the business model and the associated investment performance (Boffo & Patalano, 2020).

A recent EU regulation defines ESG factors as sustainability factors and emphasises that the environmental, social and employee matters like respect of human rights, antibribery, and anticorruption, represent important sustainability factors (European Commission, 2019).

In shedding light of the importance of ESG-related risks assessment, which represents a key priority for both decision makers, central banks, and financial market players, the European Banking Authority (EBA) has set several priorities on sustainable finance and activities related to ESG risks management. For example, to estimate the potential effect of climate risks on banking activity and reliably map the banks' exposures, in 2020 EBA launched a pilot learning exercise as a valuable tool that complements the other quantitative and qualitative approaches employed by EBA to assess ESG risks (EBA, 2021c).

Although several articles and reports refer to the importance of implementation and taking into account ESG factors in all business decisions made by intermediaries in financial markets, they still remain a challenge for contemporary financial markets (Zorlu, 2018).

A review of the literature indicates two main research strands, namely the influence of a country's ESG performance on economic growth and, respectively, the effect of ESG on banking system activity. For example, Wang et al. (2023) argue

that “the economic benefits of country-level ESG performance are most pronounced in countries with bank-based financial systems”. Menicucci and Paolucci (2023) investigate the influence of environmental performance, social responsibility, and corporate governance (ESG) dimensions on banking system performance in a country-level case-study approach. They claim that the environmental dimension of ESG exerts the most significant impact on banking profitability, and reveal significant positive relationship between waste and emission reductions (as proxies for the environmental component) and ROE and ROA.

In general, empirical findings are mixed because some studies address a sample of countries, while others represent a case study for a single country. In terms of the study coverage, some employ the aggregate value of ESG, while others prefer to test the various dimensions of ESG policies at a disaggregated level.

3. Data and Sample Selection

The banking system data used in the study come from the World Bank Global Financial Development database and consist of the following key indicators: bank concentration, bank cost-to-income ratio, bank deposits to GDP, credit/deposit ratio, nonperforming loans to gross loans, regulatory capital to risk-weighted assets, ROA and ROE. The country governance indicators are summarised in Table 1. Being constrained by the country sustainability data, our sample period ranges from 1997 to 2021. The sample of countries included in the category of temperate climate profile is represented by: Belgium, France, Greece, Italy, the Netherlands, Portugal, and Spain.

Table 1. List of selected governance indicators for the G dimension of the ESG concept

Governance indicator	Description	Source of the data
Control of Corruption	the extent to which public power is exercised for private gain, including petty and corruption, as well as “capture” of the state by elites and private interests.	World Bank ESG indicators
Political Stability and Absence of Violence/Terrorism	the likelihood of political instability and/or politically-motivated violence	World Bank ESG indicators
Ratio of female to male labour force participation rate	labour force participation rate of women	World Bank ESG indicators
Regulatory Quality	government ability to formulate and implement sound policies and regulations that promote private sector development	World Bank ESG indicators
Rule of Law	the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts	World Bank ESG indicators

Source: World Bank ESG Data Portal.

The Granger causality test is employed as a statistical method to verify the causal relationship between pairs of variables to understand particular interactions between a set of time series (Shojaie and Fox, 2022). In particular, it tests “whether one variable in a linear relation can be meaningfully described as a dependent variable and the other variable as an independent variable, whether the relation is bidirectional, or whether no functional relation exists at all” (Stern, 2004). In other words, the findings reveal whether changes in a given variable precede those of the other. A complementary definition is that 'testing for Granger causality relies on estimating the capacity of dynamics in one-time series to forecast dynamics in another' (Oravec and Vandekerckhove, 2023).

4. Causality analysis on countries’ governance performance and banking indicators

We distinctly analyse the causal relationship between the governance component and key banking indicators for each country in the sample. Table 2 synthesises only the statistically significant relationships identified between pairs of variables.

Table 2. Banking system indicators and country-level governance performance

Country	Granger test relationship	Obs.	F-statistic	Prob.
Belgium	Rule of law does not Granger cause ROA	18	5,28	0,0209
	Rule of law does not Granger cause ROE	18	4,26	0,037
	Control of corruption does not Granger cause bank concentration	18	4,72	0,028
	Rule of law does not Granger cause bank concentration	18	3,93	0,046
	Bank credit to bank deposits (%) does not Granger cause control of corruption	18	2,903	0,0907
	Bank credit to bank deposits (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	18	4,44	0,034
	Bank credit to bank deposits (%) does not Granger cause Regulatory Quality	18	5,07	0,023
	Rule of Law does not Granger cause bank credit to bank deposits (%)	18	3,54	0,062
	Bank non-performing loans to gross loans (%) does not Granger cause regulatory quality	17	5,35	0,021
	Rule of law does not Granger cause Bank non-performing loans to gross loans (%)	17	6,11	0,015
	Ratio of female to male labour force participation rate does not Granger	21	3,76	0,046

Country	Granger test relationship	Obs.	F-statistic	Prob.
	cause bank regulatory capital to risk-weighted assets			
	bank regulatory capital to risk-weighted assets (%) does not Granger cause regulatory quality	17	4,06	0,045
France	Bank concentration does not Granger cause control of corruption	18	4,64	0,0301
	Ratio of female to male labour force participation rate does not Granger cause bank concentration	20	3,97	0,041
	Bank credit to bank deposits (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	18	3,46	0,062
	Bank deposits to GDP (%) does not Granger cause regulatory quality	17	3,34	0,071
	Rule of law does not Granger cause bank non-performing loans to gross loans (%)	16	3,74	0,057
	Regulatory quality does not Granger cause ROA	20	3,01	0,079
	ROE does not Granger cause rule of law	17	3,49	0,064
Greece	Bank concentration does not Granger cause control of corruption	16	9,71	0,0037
	Ratio of female to male labour force participation rate (%) does not Granger cause bank concentration	16	6,09	0,02
	Regulatory quality does not Granger cause bank concentration	16	5,13	0,027
	Bank concentration does not Granger cause regulatory quality	16	3,07	0,086
	Bank concentration does not Granger cause rule of law	16	4,82	0,031
	Control of corruption does not Granger cause bank cost to income ratio (%)	16	3,85	0,053
	Bank cost to income ratio (%) does not Granger cause control of corruption	16	8,23	0,006
	Ratio of female to male labour force participation rate (%) does not Granger cause bank credit to bank deposits	19	6,65	0,009
	Regulatory quality does not Granger cause bank credit to bank deposits	18	3,11	0,078

Country	Granger test relationship	Obs.	F-statistic	Prob.
	Rule of law does not Granger cause bank credit to bank deposits (%)	18	2,94	0,088
	Bank credit to bank deposits (%) does not Granger cause rule of law	18	2,97	0,086
	Control of corruption does not Granger cause bank non-performing loans to gross loans (%)	17	4,13	0,043
	Bank non-performing loans to gross loans (%) does not Granger cause control of corruption	17	4,47	0,035
	Political Stability and Absence of Violence/Terrorism does not Granger cause bank non-performing loans to gross loans	17	3,93	0,048
	Ratio of female to male labour force participation rate does not Granger cause bank non-performing loans to gross loans	21	3,27	0,064
	Regulatory quality does not Granger cause bank non-performing loans to gross loans (%)	17	9,93	0,003
	Bank deposits to GDP (%) does not Granger cause ratio of female to male labour force participation rate (%)	19	6,82	0,008
	Bank deposits to GDP does not Granger cause regulatory quality	18	4,65	0,03
	Ratio of female to male labour force participation rate does not Granger cause bank regulatory capital to risk-weighted assets	21	4,85	0,023
	Bank regulatory capital to risk-weighted assets (%) does not Granger cause ratio of female to male labour force participation rate	21	5,44	0,015
	Bank regulatory capital to risk-weighted assets (%) does not Granger cause regulatory quality	17	9,05	0,004
Italy	Political Stability and Absence of Violence/Terrorism does not Granger cause ROA	18	6,36	0,012
	Political Stability and Absence of Violence/Terrorism does not Granger cause ROE	18	3,16	0,076
	Regulatory quality does not Granger cause bank concentration	18	2,93	0,089

Country	Granger test relationship	Obs.	F-statistic	Prob.
	Bank concentration does not Granger cause rule of law	18	4,56	0,031
	Regulatory quality does not Granger cause bank cost to income ratio (%)	18	4,65	0,029
	Bank cost to income ratio does not Granger cause rule of law	18	10,06	0,002
	Bank credit to bank deposits (%) does not Granger cause control of corruption	18	7,34	0,007
	Ratio of female to male labour force participation rate (%) does not Granger cause bank credit to bank deposits (%)	19	2,81	0,093
	Regulatory quality does not Granger cause bank credit to bank deposits (%)	18	4,12	0,041
	Bank deposits to GDP does not Granger cause Political Stability and Absence of Violence/Terrorism	18	2,77	0,099
	Bank deposits to GDP does not Granger cause regulatory quality	18	4,28	0,037
	Bank non-performing loans to gross loans (%) does not Granger cause control of corruption	17	4,55	0,334
	Political Stability and Absence of Violence/Terrorism does not Granger cause bank non-performing loans to gross loans	17	4,17	0,042
	Bank non-performing loans to gross loans (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	17	3,96	0,047
	Rule of law does not Granger cause bank regulatory capital to risk-weighted assets	17	8	0,006
Netherlands	Bank credit to bank deposits (%) does not Granger cause ratio of female to male labour force participation rate (%)	20	5,23	0,035
	Ratio of female to male labour force participation rate (%) does not Granger cause bank deposits to GDP (%)	20	3,6	0,075
	Bank deposits to GDP (%) does not Granger cause regulatory quality	19	5,75	0,029

Country	Granger test relationship	Obs.	F-statistic	Prob.
	Rule of law does not Granger cause bank concentration (%)	19	3,18	0,094
	Control of corruption does not Granger cause bank cost to income ratio (%)	19	18,99	0,0005
	Bank cost to income ratio (%) does not Granger cause control of corruption	19	3,11	0,097
	Regulatory quality does not Granger cause bank cost to income ratio (%)	19	7,04	0,017
	Control of corruption does not Granger cause bank non-performing loans to gross loans (%)	14	4,01	0,07
	Bank regulatory capital to risk-weighted assets (%) does not Granger cause regulatory quality	18	3,84	0,068
	Bank regulatory capital to risk-weighted assets (%) does not Granger cause rule of law	18	4,05	0,063
	Political Stability and Absence of Violence/Terrorism does not Granger cause ROA	19	5,13	0,037
	Portugal	Regulatory Quality does not Granger cause Bank cost to income ratio (%)	18	4,45
Control of Corruption does not Granger cause Bank concentration (%)		18	4,84	0,026
Ratio of female to male labour force participation rate (%) does not Granger cause Bank concentration (%)		20	3,07	0,076
Bank concentration (%) does not Granger cause rule of law		18	2,95	0,088
Control of corruption does not Granger cause Bank credit to bank deposits (%)		18	3,87	0,047
Bank credit to bank deposits (%) does not Granger cause Political Stability and Absence of Violence/Terrorism		18	3,81	0,05
Bank credit to bank deposits (%) does not Granger cause Ratio of female to male labour force participation rate (%)		19	2,82	0,093
Regulatory quality does not Granger cause Bank credit to bank deposits (%)		18	3,52	0,06

Country	Granger test relationship	Obs.	F-statistic	Prob.
	Bank non-performing loans to gross loans (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	14	14,04	0,002
	Ratio of female to male labour force participation rate (%) does not Granger cause Bank regulatory capital to risk-weighted assets (%)	21	4	0,038
	Regulatory quality does not Granger cause ROE	18	8,82	0,004
Spain	Political Stability and Absence of Violence/Terrorism does not Granger cause Bank concentration (%)	18	4,64	0,03
	Ratio of female to male labour force participation rate (%) does not Granger cause Bank concentration (%)	20	5,12	0,02
	Bank cost to income ratio (%) does not Granger cause Control of Corruption	18	4,57	0,031
	Political Stability and Absence of Violence/Terrorism does not Granger cause Bank cost to income ratio (%)	18	3,38	0,065
	Ratio of female to male labour force participation rate (%) does not Granger cause Bank cost to income ratio (%)	20	6,25	0,01
	Bank cost to income ratio (%) does not Granger cause Ratio of female to male labour force participation rate (%)	20	5,57	0,015
	Regulatory quality does not Granger cause Bank cost to income ratio (%)	18	6,26	0,012
	Rule of law does not Granger cause Bank cost to income ratio	18	6,4	0,012
	Control of Corruption does not Granger cause Bank credit to bank deposits (%)	18	3,38	0,065
	Bank credit to bank deposits (%) does not Granger cause Control of Corruption	18	2,78	0,098
	Bank credit to bank deposits (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	18	4,17	0,039
	Ratio of female to male labour force participation rate (%) does not	19	4,35	0,034

Country	Granger test relationship	Obs.	F-statistic	Prob.
	Granger cause Bank credit to bank deposits (%)			
	Regulatory quality does not Granger cause Bank credit to bank deposits (%)	18	5,35	0,021
	Bank deposits to GDP (%) does not Granger cause Ratio of female to male labour force participation rate (%)	19	5,07	0,022
	Bank non-performing loans to gross loans (%) does not Granger cause Political Stability and Absence of Violence/Terrorism	17	2,87	0,095
	Bank non-performing loans to gross loans does not Granger cause Ratio of female to male labour force participation rate	21	3,33	0,061
	Ratio of female to male labour force participation rate (%) does not Granger cause Bank regulatory capital to risk-weighted assets (%)	21	3,77	0,045
	Bank regulatory capital to risk-weighted assets (%) does not Granger cause Ratio of female to male labour force participation rate (%)	21	2,75	0,094
	Rule of law does not Granger cause Bank regulatory capital to risk-weighted assets (%)	17	3,5	0,063
	Political Stability and Absence of Violence/Terrorism does not Granger cause ROA	18	3,37	0,066
	Political Stability and Absence of Violence/Terrorism does not Granger cause ROE	18	3,12	0,078
	ROE does not Granger cause Political Stability and Absence of Violence/Terrorism	18	3,42	0,064

Source: authors, by using EViews software.

The findings reveal that the five indicators used as a proxy for the governance dimension exhibit a causal relationship with the banking indicators, in each of the countries considered. Most causality relationships have been identified for Spain (22) and Greece (21), followed by Italy (15), Belgium (12), Portugal, and the Netherlands (11) while France shows only seven statistically significant causal links. By having a closer look at the indicator type, we uncover that change in governance indicators seem to act as the prevailing determinant for banking indicators in

Belgium, Portugal and Spain (therefore, change in governance is the cause and banking indicators developments are the effect), while in Netherlands, France, Greece and Italy the interplay is relatively balanced between governance and banking indicators.

Bilateral causality has been identified between regulatory quality and bank concentration (in Greece), control of corruption and bank cost-to-income ratio (in Greece, the Netherlands), rule of law and bank credit to bank deposits (in Greece), control of corruption and bank nonperforming loans to gross loans (in Greece), control of corruption and bank credit to bank deposits (in Spain), political stability and absence of violence/terrorism and bank nonperforming loans to gross loans (in Italy), ratio of female to male labour force participation rate and bank cost-to-income ratio (in Spain), ratio of female to male labour force participation rate and bank regulatory capital to risk-weighted assets (in Spain).

Banking system indicators that appear to precede changes in governance ones (unilateral relationship) are related to: bank credit to bank deposits (Belgium, France, Italy, Netherlands, Portugal, Spain), bank deposits to GDP (France, Greece, Italy, Netherlands, Spain), bank non-performing loans to gross loans (Belgium, Greece, Italy, Portugal, Spain), bank regulatory capital to risk-weighted assets (Belgium, Greece, Netherlands), bank cost to income ratio (Greece, Italy, Spain), bank concentration (France, Greece, Italy, Portugal), ROE (France, Spain).

As for the opposite relationship (governance – banking), changes in banking profitability indicators (ROA and ROE) are influenced by previous governance changes in nine cases (for Belgium, France, Italy, Netherlands, Portugal, Spain), changes in bank concentration occur in 11 cases (Belgium, France, Greece, Italy, Netherlands, Portugal, Spain), changes in bank cost-to-income ratio occur in nine cases (Greece, Italy, Netherlands, Portugal), changes in bank nonperforming loans appear in 8 cases (for Belgium, France, Italy, Greece, and Netherlands), changes in bank credit to bank deposits are triggered in 11 cases (Belgium, Greece, Italy, Portugal, Spain), changes in bank regulatory capital to risk-weighted assets occur in six cases (Belgium, France, Greece, Italy, Netherlands, Portugal, Spain), while changes in bank deposits to GDP seem to be determined by governance indicators in only one case (Netherlands).

5. Conclusions

ESG issues have become one of the top priorities of the financial institutions, being primarily motivated by the demands of government bodies, banking regulators and supervisors or shareholders, which further led to changes in the business strategy and value creation in both financial and non-financial indicators because of the demand for publishing ESG and other non-financial reports (Annandale et al., 2022).

Statistical findings validate our initial assumption of the interaction between the governance dimension and several key indicators of the banking system. Each of the five governance indicators and each of the eight banking indicators appears to influence them or to be influenced. Bilateral causality is present mostly in Greece and Spain, the control of corruption and bank non-performing loans being the

variables most often included in the causal link. Except for bank deposits in GDP, all banking indicators belonging to the Italian banking system are determined by previous changes in the country's governance indicators. A similar situation exists for the Netherlands, all its banking indicators, apart from bank credit to bank deposits, are being impacted by changes in governance.

Although the direction of this relationship (positive or negative) is not one of the outcomes of the Granger causality test, there is robust evidence of the interaction between a country's compliance with the regulatory framework and the rule of law, corruption management, political stability, and gender balance (through female labour force participation rate) and key banking indicators related to competition, profitability, capital adequacy, liquidity, efficiency, credits, and deposits managed.

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