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Investigating the Determinants of Banking Credit to Government in OECD Countries

Abstract. *This study investigates the factors shaping the evolution of banking credit provided to the government using a sample of 34 OECD countries during the 2004 to 2020 period. The primary focus of the paper is to examine the dynamics of government credit provided by commercial banks in connection with various bank-related factors. The estimates reveal a positive association between the size of the banking system, and the dependent variable. Furthermore, we reveal a positive impact coefficient between credit-to-deposits ratio and the level of banking loans provided to government. Conversely, a negative coefficient linked the Return-on-Assets to the dependent variable suggesting that less profitable banks may hesitate in providing government credit, with potential implications for banking sector stability. Interestingly, lending to the public sector is not substantially impacted by the concentration of banks assets. With implications for analysts and politicians, these findings add to a more sophisticated understanding of the complex interaction between commercial banks and the government.*

Keywords: *credit to government, banking profitability, Tobit regression, GMM, COVID-19 pandemic.*

JEL Classification : E42, G18, C33.

1. Introduction

In recent decades, the global financial landscape has undergone profound changes, with the banking sector serving as a pivotal driver of economic stability and growth. Under these circumstances, the nexus between banking system characteristics and government dependence on banking credit has garnered significant attention. Thus, the banking sector plays a crucial role in channelling

funds into the broader economy, including the public sector. Governments, as both regulators and borrowers, are interested in maintaining a stable and profitable banking sector. However, this relationship is not unidirectional since the health of the banking sector can be influenced by various macroeconomic factors, while government policies and fiscal health can, in turn, impact the stability and profitability of banks. Against this background, it is crucial to investigate how the profitability and risk profile of banks influence their willingness and capacity to extend credit to governments.

The 21st century presented unique challenges for the global economy, with the global financial crisis 15 years ago highlighting the fragility of banking systems around the world. The repercussions of this crisis have persisted, prompting significant regulatory reforms devoted to enhancing the stability and resilience of financial institutions. However, while countries struggled to deal with the effects of the financial crisis, a new, unanticipated problem arose: the COVID-19 pandemic. The current global health crisis not only has put the world's health systems to the test, but it has also put great economic strain on the countries involved, creating significant problems for the financial industry and public budgets.

The COVID-19 pandemic has heightened the importance of understanding the relationship between the architecture of the banking system and government credit provided by the commercial banks. Commercial banks can lend to the government in a number of ways, such as by buying government bonds, giving direct government loans, participating in treasury auctions, buying government assets, and collaborating with global financial organisations like the World Bank or the International Monetary Fund. The precise procedures used can differ according to the financial structure and laws of each country, demonstrating the variety of methods commercial banks assist economic stability and government funding.

Governments have rushed to put fiscal measures in place to lessen the negative economic effects of lockdowns and decreased economic activity. Meanwhile, banks faced increased risk exposures and uncertainties, given the potential for loan defaults and disruptions in financial markets. Indeed, loan moratoria implemented during the COVID-19 pandemic have provided crucial relief to borrowers, since their extended use raises legitimate concerns about their impact on banking stability. As the pandemic subsides and economic conditions evolve, a careful and transparent approach to managing the transition away from these measures will be essential to assess their true impact on the banking sector's health and resilience.

As the pandemic unfolded, many governments turned to their banking sectors for support through increased borrowing. This reliance on bank credit, against a backdrop of heightened economic uncertainty, prompts essential questions: How do banking sector profitability and risk affect their willingness to provide credit to governments during times of crisis? How do government fiscal policies and macroeconomic factors influence this dynamic? To what extent do political stability and other control variables play a role in this complex relationship?

This paper takes the issues raised above to the data by investigating to what extent the profitability and risk profile of banks influence their willingness and

capacity to extend credit to governments. We make a significant contribution to the understanding of the intricate dynamics between commercial banks, government credit, and broader economic stability across 34 OECD nations from 2004 to 2020. Through examining the relationship between commercial banks and banks, the study illuminates important facets of financial and fiscal connections. The results highlight the need for an adequately capitalised banking industry in supporting government credit, the influence of fiscal sustainability on bank lending choices, and the significance of economic metrics like the output gap. Policymakers, investors, and analysts may use these insights to influence the development of well-informed plans that support good fiscal policies, a robust financial system, and economic resilience in the face of ever-changing global problems.

2. Literature Review

The structure of public debt and the factors that influence its level have received a lot of attention in the research papers in the public finance literature. Numerous factors that contribute to the growth and sustainability of public debt have been studied by researchers. The budgetary policy is one important factor. Reinhart and Rogoff (2010) conducted a seminal study that emphasised the influence of fiscal policy on the dynamics of government debt. Specifically, the study focused on how budgetary choices, tax laws, and government spending determine the trajectory of debt levels. In a similar manner, Alesina et al. (2015) clarified how political institutions affect government debt by analysing the connection between political variables and fiscal results. The impact of environmental factors as uncertain parameters in the evaluation of the performance of decision-making units, Ebrahimnejad et al. (2023), they cannot be taken into account as determinants of the crediting decision.

The business climate and economic growth have exhibited a significant impact on how much debt the government has. At the same time, the impact of the three ESG pillars (environmental, social, governance) on the banks financial performance, Dragomir et al. (2022), must also be taken into account. According to Cecchetti et al. (2011) and Perotti (1999), there is a strong correlation between periods of economic decline and high amounts of public debt, sheding light on the cyclical nature of debt accumulation. Additionally, the impact of inflation on government debt continues to be a central concern. Ball and Mankiw (2019) and Caceres et al. (2021) have explored the complex relationship between inflation dynamics and the sustainability of government debt. Ball and Mankiw (2019) explore how monetary policy and inflation expectations affect the real burden of debt, offering insights into the complex implications on fiscal policy. In their investigation of the effects of inflation on developing market economies, Caceres et al. (2021) bring to light the opportunities and difficulties governments have when it comes to controlling debt in the face of inflationary pressures. Policymakers navigating the intricacies of inflation and its consequences for managing public debt must comprehend these recent results.

The interest rate is another important factor shaping the evolution of the government indebtedness. Higher interest rates increase the costs associated with repaying public debt and may trigger a vicious cycle of rising debt. Studies by Afonso and Jalles (2013) and Eggertsson and Krugman (2012) investigate the connection between interest rates, the sustainability of debt, and the possible influence on economic growth. The quality of legal frameworks and governance are examples of institutional elements that influence the amount of government debt. Besley and Persson (2011) and Hallerberg and von Hagen (1999) investigated the relationship between institutional quality and governments' capacity to appropriately manage their debt and fiscal consequences. For them, Voican (2020), the quality of problem identification and the accurate collection of data is vital for the research results.

Although there is a substantial amount of literature that examines the various factors influencing public debt levels, there is a noticeable lack of research papers which emphasise on the factors driving bank lending. Several topics, including interest rates, fiscal policy, economic development, and institutional problems, are extensively covered in the literature on public debt. On the other hand, knowledge of the factors influencing bank credit to governments – a crucial aspect of financial dynamics – has received comparatively little attention. For a thorough knowledge of the complex relationships between financial institutions and the fiscal health of governments, it is imperative that this research gap is closed. This is especially important since banking credit is a major factor in determining both the effectiveness of policy interventions and the stability of the economy.

3. Data description

We used a sample of 34 OECD nations from the years 2004 to 2020. Credit to the Government (GovCredit), which is the ratio of bank credit to the government and public companies to GDP, is the dependent variable. It is a very important economic indicator since it sheds light on the connection between public borrowing and the general state of the financial and economic systems. Policymakers, investors, and analysts use it to analyse the stability of the economy and the financial system and to make well-informed decisions.

The ratio of bank credit to government and public enterprises to GDP can be sensitive to a wide range of control factors, and academic research has explored these influences extensively. According to Reinhart and Rogoff (2010), increased government spending and borrowing can lead to a rise in GovCredit ratio, so it is necessary to include among the control variables the level of public debt (Debt) and the primary balance (Balance). Moreover, political stability (PolStab) can influence borrowing decisions. Governments with more stable political environments may be better positioned to manage their borrowing needs effectively. Also, the state of the economy, including output gap (GAP), inflation (INF), interest rate (IR), and foreign direct investments (FDI), can influence this indicator. During economic downturns, governments may borrow more to stimulate growth, impacting the ratio. Conversely,

economic expansion may reduce government borrowing needs (Blinder and Zandi, 2015).

This paper primarily investigates how various bank-related factors shape the GovCredit ratio, crucial for a comprehensive understanding of a country's financial system, its interactions with government fiscal policy, and their impact on policy decisions, financial stability, and economic resilience. Key dependent variables include the banking sector's size, concentration, profitability, leverage, and risk. A detailed description of the variables included in the regression analysis is presented in Appendix 1.

The first step of the analysis requires the investigation of stationarity. Unit root tests are indispensable tools in panel data analysis, especially when dealing with non-stationary variables. A growing body of literature has highlighted the critical role of these tests in addressing issues related to spurious regression and the reliability of panel data models. These challenges stem from the fact that non-stationary variables, by definition, exhibit trends or stochastic behaviour that can lead to misleading results when subjected to traditional econometric techniques. The LLC test, developed by Levin et al. (2002), is particularly valuable when dealing with panel datasets of moderate size. Its simplicity, robustness, and ability to account for the possibility of homogeneous unit root properties across individual entities make it a pragmatic choice. By assessing the order of integration for each variable within the panel, the LLC test aids in identifying whether variables are stationary or non-stationary, thus helping to mitigate the risk of spurious regression. The estimates are presented in Table 1.

Table 1. Unit root test results

Variables	LLC test (intercept included)		Variables	LLC test (intercept included)	
	Statistics	Probability		Statistics	Probability
GovCredit	-1.3575	0.0873	FDI	-4.6936	0.0000
Debt	-2.1094	0.0175	BA	-3.0411	0.0012
Balance	-4.7913	0.0000	BCON	-1.9279	0.0269
PolStab	-2.1158	0.0172	CDR	-8.3594	0.0000
GAP	-1.5678	0.0585	ROA	-5.1683	0.0000
INF	-10.5418	0.0000	CRISES	N/A	N/A
IR	-10.3088	0.0000	COVID	N/A	N/A

Source: Authors' calculations.

Among the key variables examined, government credit ("GovCredit") and the economic output gap ("GAP") showed significant p-values at the 10% level. In contrast, debt levels ("Debt"), the balance of payments ("Balance"), political stability

("PolStab"), inflation ("INF"), and interest rates ("IR") demonstrated highly significant p-values (all < 0.05), indicating evidence against the presence of unit roots and suggesting stationarity. Additionally, variables such as foreign direct investment ("FDI"), bank assets ("BA"), bank concentration ("BCON"), credit to deposit ratio ("CDR"), and return on assets ("ROA") exhibited highly significant p-values, supporting the notion of stationarity. The results for variable "COVID" and "CRISES" were not reported since testing the stationarity of a dummy variable may not be meaningful or necessary in most cases. Dummy variables are binary variables that typically take on values of 0 or 1, representing the absence or presence of a certain categorical attribute. Unlike continuous time series data, dummy variables do not exhibit trends, seasonality, or other patterns that would make stationarity relevant.

Multicollinearity is a critical consideration preceding our regression analysis. It emerges when two or more independent variables within the regression model exhibit strong correlations, posing significant analytical challenges. This interdependence obscures the individual influence of each variable on the dependent variable, complicating our interpretation. Detecting multicollinearity necessitates calculating correlation coefficients among the independent variables and conducting a robustness check using the Variance Inflation Factor (VIF). By addressing this issue upfront, we enhance the reliability and interpretability of our regression results. The correlation matrix of the independent variables is presented in Figure 1 below.
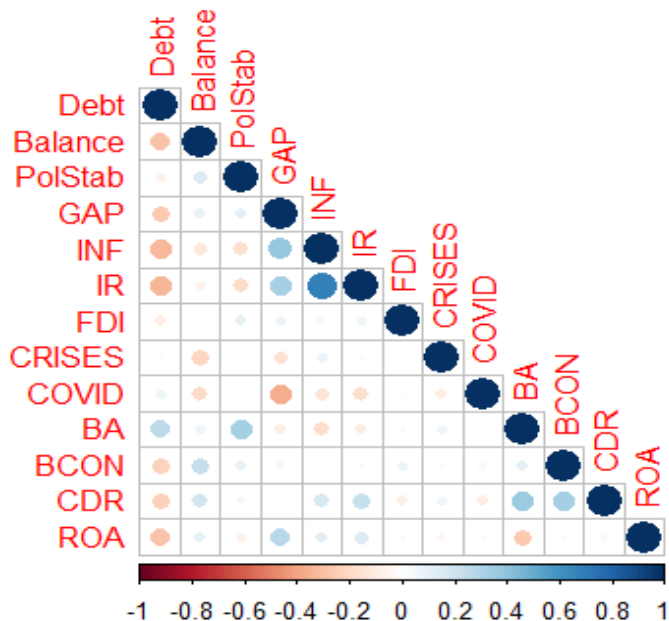
Figure 1. Correlation matrix
Source: Authors' analysis.

Since all the pairwise correlation coefficients among the explanatory variables consistently exhibit values below the threshold of 40%, it implies that multicollinearity, characterised by substantial intercorrelations among these predictors, is unlikely to exert a pronounced and detrimental impact on the robustness and interpretability of the model.

4. Results

4.1 System GMM

Over the past two decades, there has been a noteworthy surge in the use of panel data in the fields of economics and finance. However, the application of standard panel data techniques introduces a significant challenge related to endogeneity, which may stem from omitted variables, measurement errors, and simultaneity. Addressing this challenge, the estimators proposed by Arellano-Bond (Arellano and Bond, 1991) and Arellano-Bover/Blundell-Bond (Arellano and Bover, 1995; Blundell and Bond, 1998) have gained widespread popularity. Their appeal lies in their effectiveness in handling various common scenarios, including: i) situations where independent variables are not strictly exogenous, demonstrating correlation with past and potentially current error realisations; ii) the presence of fixed individual effects; and iii) the existence of heteroskedasticity and autocorrelation within individuals, albeit not across them.

In Table 2 we report the estimation results using the estimator proposed by Arellano and Bond (1991). As mentioned in the introduction section, this paper is mainly concerned with capturing the complex dynamics in which bank-related attributes, that is, Bank Assets (BA), Bank Concentration (BCON), Credit to Deposit Ratio (CDR), and Return on Assets (ROA), have an impact on the amounts of bank credit that are provided to the public sector and government. We want to clarify the complicated connections and consequences that these important banking indicators have on the distribution and accessibility of loans to government entities by thoroughly analysing them.

Table 2. Arellano-Bond dynamic panel-data estimation

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
GovCredit (-1)	0.7027***	0.6726***	0.7034***	0.6991***	0.7032***
Debt	-0.0002	-0.0020	0.0001	0.0078	-0.0017
Balance	-0.4100***	-0.3775***	-0.4101***	-0.3939***	-0.3869***
PolStab	0.0243***	0.0321***	0.0246***	0.0291***	0.0224***
GAP	-0.3107***	-0.2514***	-0.3110***	-0.2487***	-0.2866***
INF	0.2078**	0.1692**	0.2075**	0.1596*	0.2046***
IR	-0.0404	-0.1192	-0.0403	-0.1228	-0.0545
FDI	0.0053	0.0031	0.0052	0.0016	0.0056
BA		0.0371***			
BCON			0.0057		

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
CDR				0.0272***	
ROA					-0.1264***
CRISES	0.0332	-0.0840	0.0308	-0.0871	0.0927
COVID	-0.6621	-0.4367	-0.6816	0.0645	-0.4928
Intercept	1.0417	-2.4693	0.5914	-2.5618	1.4239
Observations	**510**	**510**	**510**	**510**	**510**
Wald chi2	**807.5**	**866.64**	**805.64**	**832.53**	**812.35**

Note: ***, **, * denote statistical significance at 1%,5% and 10% level

Source: Authors' calculations.

First of all, the positive coefficient and statistically significant at 1% level attributed to Bank Assets (BA) suggests that a powerful banking system, indicated by a larger share of assets in relation to the national economic output, exhibits a considerable impact on the extent of banking loans extended to the government and public enterprises. Thus, for every unit increase in the share of total assets held by deposit money banks in the economy, there is a substantial corresponding increase in the level of bank credit provided to governmental entities. This underscores the pivotal role of a well-capitalised banking sector not only in serving the financial needs of the public sector but also in contributing to the overall economic dynamics. A powerful banking system, with significant assets encompassing claims in various sectors, including government and public enterprises, emerges as a key driver in facilitating the flow of credit to support governmental initiatives and broader economic activities. Second, a higher CDR signifies a greater propensity of banks to extend credit, potentially reflecting an increased confidence in the creditworthiness of the government and public enterprises. This positive association which is statistically significant at the 1% level not only underscores the importance of prudent credit management in shaping the lending landscape but also implies potential implications for the liquidity and financial health of the banking sector. Third, the negative coefficient associated to ROA suggests that less profitable banks may exhibit a reduced capacity or willingness to extend credit to the government. A negative association with ROA might reveal that, as banks experience lower returns on their assets, there is a consequential decrease in their engagement in providing credit to the public sector. This insight not only emphasises the importance of the financial health and profitability of banks in shaping lending patterns, but also suggests potential implications for the stability and efficiency of the banking sector. As Return on Assets decreases, the capacity of banks to actively participate in financing government initiatives may diminish, influencing the broader economic and financial landscape. Finally, we failed to identify statistically significant estimates relating BCON to the level of banking credit to the government. Thus, the variations in the concentration of banking assets among fewer or more institutions, do not play a statistically significant role in influencing the allocation of credit to the public sector.

4.2 Fixed Effects TOBIT Regression

To investigate to what extent bank characteristics shaped the evolution of the GovCredit, the most common approach is TOBIT regression, since the dependent variable is a censored one (between 0% and 100%), as we can see in Figure 2. However, standard Tobit regressions, due to the multitude of country fixed effects, do not provide consistent estimates since fixed effects cannot be conditioned out of the likelihood (Arena and Kutner, 2015). Therefore, to control for country fixed effects, we follow Honoré (1992) who has developed the semiparametric estimator for fixed effect TOBIT models also known as trimmed least absolute deviation (LAD)[1].
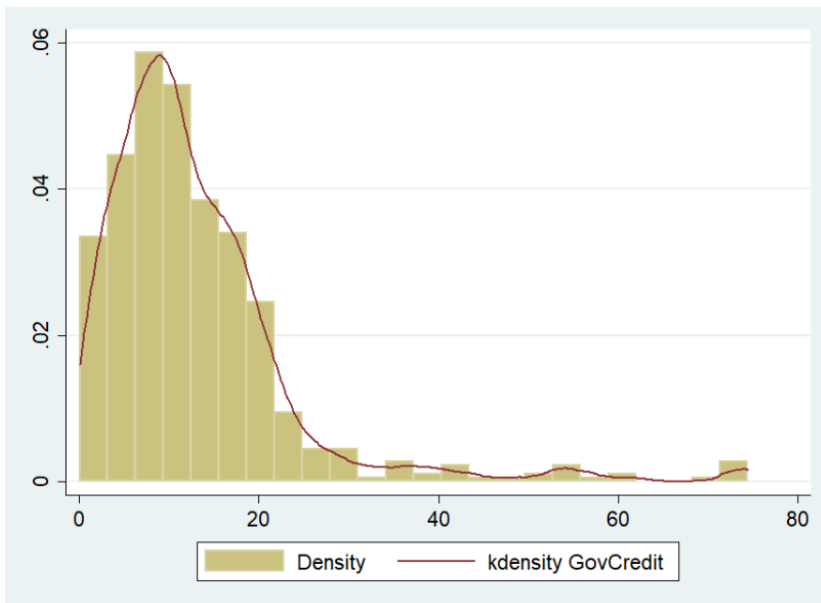
Figure 2. Density and KDE of the dependent variable (%)
Source: Authors' analysis.

In Eq. (1) we specify the baseline model using dividend-to-equity as a dependent variable:

$$\text{GovCredit}_{it} = \alpha + \beta \text{CONTOLS}_{it} + \vartheta \text{BANK}_{it} + \mu_i + \vartheta_t + \varepsilon_{it} \qquad (1)$$

where $i = \overline{1, N}$ is an index for countries, $t = \overline{1, T}$ is an index for time while BANK_{it} is a vector of bank-specific control variables (BA, BCON, BCON, CDR) for country i at time t. Furthermore CONTOLS_{it} is a vector of control variables. Finally, μ_i is a country-fixed effect, ϑ_t captures time effects common to all countries, while ε_{it} is the zero-mean disturbance term. The dependent variable does not assume negative values. This renders estimates resulting from standard ordinary least squares (OLS) inconsistent (Wooldridge, 2002; Johari et al., 2020). Thus, we estimate Eq. (1) using

[1] The estimator has also been used in a recent study in dividend payout policy by Arena and Kutner (2015) or Johari et al. (2020).

a censored normal regression TOBIT model with fixed effects instead (Honoré, 1992). This estimator takes into consideration the nature of our dependent variable and is consistent and asymptotically normal in the presence of bank-fixed effects. The results are presented in Table 3.

Table 3. Fixed-effect TOBIT estimates

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
GovCredit (-1)	0.7854***	0.7804***	0.7851***	0.7932***	0.7848***
Debt	0.0214	0.0214	0.0214	0.0208	0.0155
Balance	-0.3615***	-0.3302***	-0.3617***	-0.3551***	-0.3421***
PolStab	0.0491	0.3339	0.0589	0.0620	0.0786
GAP	-0.1773**	-0.1301*	-0.1781**	-0.1433*	-0.1489***
INF	0.0927	0.0547	0.0937	0.0526	0.0683
IR	-0.0208	-0.0883	-0.0208	-0.0761	-0.0469
FDI	0.0054	0.0043	0.0053	0.0052	0.0071
BA		0.0276***			
BCON			0.0011		
CDR				0.0119*	
ROA					-0.2046*
CRISES	0.0054	-0.1391	-0.0519	-0.1220	0.0068
COVID	-0.0511	0.4347	0.2595	0.6528	0.4564
Observations	**510**	**510**	**510**	**510**	**510**
Wald chi2	**1700.26**	**2689.75**	**2950.51**	**1773.73**	**2427.41**

Note: ***, **, * denote statistical significance at 1%,5% and 10% level. Intercepts were not included
Source: Authors' calculations.

The findings presented in Table 3 support the initial conclusions derived from the GMM approach. According to this analysis, the size of the banking system, liquidity ratio, and profitability emerge as major factors influencing the extent of loans extended by banks to the government. In addition, we find robust evidence suggesting that the dependent variable exhibits a strong first-order autoregressive pattern, indicated that the level of loans extended by banks to the government is influenced by its past levels. In simpler terms, it implies that the amount of government loans provided by banks is not only affected by current factors such as the size of the banking system, liquidity ratio, and profitability (as mentioned earlier), but is also noticeably shaped by the historical levels of government loans.

Along the same line of argument, the government's primary balance exhibits a negative impact on the amount of government loans provided by banks. This may suggest that commercial banks assess the fiscal sustainability of the government before offering it credit by purchasing government bonds. In other words, when the government's primary decreases, i.e., when the budget deficit deepens, it has a detrimental impact on the extent to which banks provide loans to the government. This negative correlation implies that banks may be more cautious or conservative in buying government bonds when its primary balance is highly likely to become negative. The statement also hints at the possibility that banks assess the fiscal

sustainability of the government before extending credit, potentially by evaluating factors such as the government's primary balance and making decisions, such as purchasing government bonds, accordingly. Furthermore, the output gap has a negative impact on the level of government loans provided by banks. The output gap refers to the difference between the actual output of an economy and its potential output when all resources are fully utilised. Therefore, as the output gap widens (indicating that the economy is operating below its full potential), it has a detrimental effect on the amount of loans provided by banks to the government. This might suggest that commercial banks may use the output gap as one of the indicators to assess the fiscal sustainability of the government. A widening output gap might signal economic underperformance or challenges, influencing banks' decisions regarding government loans.

5. Conclusions

This paper provides information about the factors influencing banking credit extended to governments in 34 OECD countries between 2004 and 2020. Firstly, we demonstrate that the characteristics of commercial banks are significant drivers of the dependent variable. A strong banking industry is essential to enabling large amounts of credit to the government, as demonstrated by the positive and statistically significant coefficient linked to bank assets. This emphasises the significance of keeping a well-capitalised banking system in order to support both government initiatives and economic dynamics. Strategies that increase the banking industry's capitalisation and resilience have to be given top priority by policymakers. Moreover, the correlation that exists between an increased Credit-to-Deposit Ratio and an upward trend in credit extension implies that careful credit management is crucial to preserving liquidity and sound financial standing in the banking industry.

Furthermore, the negative coefficient of return on assets (ROA) highlights how bank profitability affects the extent to which banks are prepared to offer government credit, highlighting the need for policies that support a financially sound banking industry in order to continue providing credit to the public sector. Last but not least, the lack of a substantial correlation between banking concentration and credit allocation emphasises the necessity for policymakers to concentrate on other factors, understanding that concentration by itself could not have a major impact on loan distribution.

In summary, this research provides comprehensive perspectives on the complex relationship that exists between the channels of government finances, banking characteristics, and economic performance. In order to develop a symbiotic relationship between banks and the government and ultimately contribute to financial stability and economic resilience, policymakers should take a comprehensive approach that includes actions to strengthen the banking sector, encourage fiscal responsibility, and address economic challenges.

References

[1] Alesina, A., Favero, C., Giavazzi, F. (2015), *The Output Effect of Fiscal Consolidations. National Bureau of Economic Research*. Working Paper No. 21453.

[2] Afonso, A., Jalles, J.T. (2013), *Growth and Productivity: The Role of Government Debt. Applied Economics*, 45(32), 4571-4579.

[3] Arellano, M., Bond, S. (1991), *Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Review of Economic Studies*, 58, 277–297.

[4] Arellano, M., Bover, O. (*1995), Another look at the instrumental variable estimation of error-components models. Journal of Econometrics*, 68, 29-51.

[5] Blundell, R.W., Bond, S. (1998). *Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics*, 87, 115-143.

[6] Cecchetti, S.G., Mohanty, M.S., Zampolli, F. (2011), *The Real Effects of Debt. BIS Working Papers* No. 352.

[7] Dragomir V.D., Bătae, O.M., Ionescu B.Ș., Ionescu-Feleagă, L. (2022), *The influence of ESG factors on financial performance in the banking sector during the Covid-19 pandemic. Economic Computation and Economic Cybernetics Studies and Research,* 56(4), 71-88.

[8] Ebrahimnejad, A., Ghiyasi, M., Nikhbakht, M., Najjarian, H. (2023), *Fuzzy Goal Programming Approach for Identifying Target Unit in Combined-Oriented DEA Models: Application in Bank Industry, Economic Computation and Economic Cybernetics Studies and Research,* 57(1), 5-22.

[9] Eggertsson, G.B., Krugman, P. (2012), *Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach. The Quarterly Journal of Economics*, 127(3), 1469-1513.

[10] Hallerberg, M., von Hagen, J. (1999), *Electoral Institutions, Cabinet Negotiations, and Budget Deficits in the European Union. International Organization*, 53(4), 833-870.

[11] Lane, P.R., Milesi-Ferretti, G.M. (2001), *The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries. Journal of International Economics*, 55(2), 263-294.

[12] Levin A., Lin, C.F., Chu, C.S., (2002), *Unit root tests in panel data: asymptotic and finite-sample properties. Journal of Econometrics*, 108(1), 1-24.

[13] Perotti, R. (1999), *Fiscal Policy in Good Times and Bad. The Quarterly Journal of Economics*, 114(4), 1399-1436.

[14] Reinhart, C.M., Rogoff, K.S. (2010), *Growth in a Time of Debt. American Economic Review*, 100(2), 573-578.

[15] Reisen, H., von Maltzan, J. (1999), *Boom and Bust and Sovereign Ratings. International Finance*, 2(2), 273-293.

[16] Voican O. (2020), *Using Data Mining Methods to Solve Classification Problems in Financial-Banking Institutions. Economic Computation and Economic Cybernetics Studies and Research,* 54(1), 159-176.

Appendix: *Description of the variables included in the regression analysis*

Variables	Definition	Source
GovCredit (dependent)	Bank credit to government and public enterprises, percent of GDP. It consists of the total amount of combined funds that are provided to the government by the bank sector.	The Global Economy
Debt	Government debt as percent of GDP. It includes domestic and foreign liabilities such as currency and money deposits, securities other than shares, and loans. It is the gross amount of government liabilities reduced by the amount of equity and financial derivatives held by the government.	The Global Economy
Balance	Fiscal balance, percent of GDP. The fiscal (budget) balance is the difference between government revenue and government expenditure. We express the value as percent of GDP to relate it to the size of the economy.	The Global Economy
PolStab	The index of Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism	The Worldwide Governance Indicators
GAP	The Output gap measures the difference between an economy's actual output and its maximum potential output expressed as a percentage of gross domestic product	OECD Database
INF	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	The Global Economy
IR	Short-term interest rates help determine the cost of short-term borrowing and the return on short-term investments, impacting how financial institutions and governments manage their immediate financial needs. These rates are a critical part of the broader financial system, influencing various economic activities and financial decisions.	OECD Database
FDI	Foreign Direct Investment, percent of GDP. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.	The Global Economy
CRISES	A dummy variable that takes on a value of 1 for the years within the recession period (2007-2009) and 0 for the years outside of it.	Own computation
COVID	A dummy variable with a value of 1 in 2020 during the COVID-19 pandemic and 0 otherwise.	Own computation
BA	Total assets held by deposit money banks as a share of GDP. Assets include claims on domestic real nonfinancial sector which includes central, state and local governments, nonfinancial public enterprises and private sector.	The Global Economy

Variables	Definition	Source
BCON	Bank concentration: percent of bank assets held by top three banks. Calculated from underlying bank-by-bank unconsolidated data from Bankscope.	Bankscope
CDR	Credit-to-deposit ratio. The financial resources provided to the private sector by domestic money banks as a share of total deposits.	The Global Economy
ROA	Return on assets. Commercial banks' pre-tax income to yearly averaged total assets. The numerator and denominator are first aggregated on the country level before division.	The Global Economy