

Article

The Impact of the Legal Environment on Bank Profitability: An Empirical Analysis of the Angolan Banking Sector

João Jungo^{1,*}  and Cláudio Félix Canguende-Valentim² 

¹ Research Unit on Governance, Competitiveness and Public Policies (GOVCOPP),
Department of Economics, Management, Industrial Engineering and Tourism (DEGEIT),
University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

² Instituto Superior Politécnico Jean Piaget de Benguela, Benguela P.O. Box 1393, Angola;
claudiovalentmk@gmail.com

* Correspondence: jungo@ua.pt

Abstract: An efficient legal system facilitates the enforcement of guarantees, enables the recovery of non-performing loans and increases trust between creditors and borrowers. This study examines the effect of the legal environment and the profitability of the Angolan banking sector. Specifically, it analyses the influence of property rights and the rule of law on bank profitability in Angola. The study employs various econometric methods for analyzing panel data, such as Feasible Generalized Least Squares (FGLS), and instrumental variables models such as Two-Stage Least Squares (IV-2SLS), Generalized Method of Moments (IV-GMM) and Quantile Regression (MQREG). The study concludes that improving the legal environment by strengthening property rights and promoting the rule of law favours the profitability of Angolan banks. In terms of practical implications, this study shows that the legal environment in Angola is an important barrier to the promotion of credit in Angola, and, above all, to improving the profitability of banks. This study contributes to the scarce literature highlighting the relationship between the legal system and the Angolan banking sector, a topic that has been little explored in the context of African countries. Furthermore, the study awakens the dormant debate on the legal system and finance.



Academic Editor: Thanasis Stengos

Received: 29 January 2025

Revised: 26 February 2025

Accepted: 2 March 2025

Published: 6 March 2025

Citation: Jungo, J., & Canguende-Valentim, C. F. (2025). The Impact of the Legal Environment on Bank Profitability: An Empirical Analysis of the Angolan Banking Sector. *Journal of Risk and Financial Management*, 18(3), 139. <https://doi.org/10.3390/jrfm18030139>

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Keywords: property rights; rule of law; bank profitability; Angola

1. Introduction

Banks are undoubtedly the most important financial institutions in developing countries like Angola, where bank deposits and loans stand out as the main financial instruments (Jungo et al., 2023b). Banks play a fundamental role in financial intermediation and in supporting the financing needs of the real economy (Albaity et al., 2022; Tehulu, 2022).

For banks to fulfil their role as financial intermediaries efficiently, it is essential that they are financially stable (Jungo et al., 2022a). As a result, the financial stability of banks is very much conditioned by their profitability (Jungo et al., 2024b). However, low profitability jeopardizes the ability to finance the economy (Thorbecke, 2021).

Bank profitability can be affected by endogenous and exogenous factors (Altaee et al., 2024). Empirical evidence confirms that the endogenous factors influencing the profitability of commercial banks are directly related to internal management, organizational structure and the strategic decisions made by management (Blaga et al., 2024; Kusi et al., 2016; Thorbecke, 2021). In general, the studies point to variables such as operational efficiency, capital structure, revenue diversification, management quality, image and reputation as

endogenous factors that can be controlled by the banks themselves (Blaga et al., 2024; Ozdemir & Altinoz, 2024).

On the other hand, exogenous factors such as macroeconomic conditions, particularly monetary, exchange rate and fiscal policy, institutional factors such as financial regulation, the legal system, innovation and globalization, demographic and behavioural factors are all external elements that influence bank performance (Thorbecke, 2021; Twairesh & Bata, 2024; Yakubu & Bunyaminu, 2024).

Recent studies show that institutional factors such as the legal environment, regulatory quality, political stability, corruption and transparency, regulatory quality and government efficiency all have an impact on bank performance (Abbas et al., 2024; Ben Ali, 2022; Dieler & Zhai, 2024; Feghali et al., 2021; Yakubu & Bunyaminu, 2024). Similarly, Sanga and Aziakpono (2022) argue that property rights, the quality of contract enforcement and the courts are crucial factors for banks to grant loans to the private sector. Arias et al. (2020) have shown that greater legal protection for banks, as well as for customers, improves the performance of the banking system.

Similarly, Beck et al. (2006); Demirgüç-Kunt et al. (2003); Levine (1998), argue that the legal system is one of the factors external to the bank that should not be ignored when analyzing the bank's performance, as it can condition the banking business. Our aim is therefore to examine the relationship between the legal environment and the profitability of the Angolan banking sector. Specifically, we aim to analyse the influence of property law and the rule of law on bank profitability in Angola over the period from 2015 to 2023, in a sample of 15 commercial banks.

We assume that the legal structure can condition banks to obtain as much information from borrowers as possible when granting loans and deteriorate the quality of the loan portfolio (Hasan et al., 2009). On the other hand, in the event of default, the banks' ability to force repayment depends heavily on the execution of contracts (ElKelish & Tucker, 2015; Hasan et al., 2009).

Banks' fear of granting loans can be explained by the quality of the information available. The theory of information asymmetry argues that incomplete information leads banks to adopt a more cautious stance when granting credit. This limitation forces them to impose greater rigour in demanding guarantees and collateral, due to the difficulty in efficiently distinguishing between good and bad borrowers (Kusi et al., 2016).

On the one hand, the requirement for guarantees when granting loans serves to mitigate the problems arising from asymmetric information when granting loans (Dieler & Zhai, 2024). On the other hand, it can unintentionally promote financial exclusion.

There has been a significant increase in the number of studies analyzing the role of institutions in explaining economic performance, the performance of financial institutions and the expansion of credit and financing of economic activity, with emphasis on the studies carried out by Eldomiaty et al. (2020); Fang et al. (2014); Ha and Nguyen (2023); Jenkins et al. (2021); Kouadio and Gakpa (2022); Malik et al. (2022); and Matima and Gossel (2022). These studies therefore agree on the need to improve institutional factors in order to reduce financial and opportunity costs in economic transactions.

The great informality of the economy and inadequate registration of property make it difficult to use assets as collateral; thus, property rights are a major barrier for banks due to the lack of legal certainty.

The relationship between the legal environment and the banking sector can be substantiated on the basis of three theories: (1) the property rights theory, which argues that the preservation of property rights encourages investment and reduces transaction costs; (2) the agency theory, which argues that the legal environment is essential to mitigate the problems of moral hazard and adverse selection; and (3) the theory of incomplete contracts,

which argues that financial contracts, such as loan contracts, do not allow for all possible contingencies, which can lead to conflicts or disputes over the execution of the contract (Beck et al., 2006; Demirgüç-Kunt et al., 2003; Levine, 1998).

We are unaware of any study analyzing the relationship between the legal environment and the banking sector in Angola. This study contributes to the scarce literature by considering property rights and the rule of law as essential factors in explaining profitability in the Angolan banking sector. Furthermore, the study rekindles the debate on the role of the legal system in the financial system.

From an empirical point of view, the study contributes by using various robust econometric techniques, such as Feasible Generalized Least Squares (FGLS), Two-Stage Least Squares with instrumental variables (IV-2SLS), Generalized Method of Moments with instrumental variables (IV-GMM) and Quantile Linear Regression (MQREG). The results of these models confirm that improvements in property rights and the rule of law contribute positively to the profitability of the banking sector. With regard to macroeconomic conditions, we found that increased economic growth can contribute to increased profitability through the demand for financing.

With regard to the political implications, the study draws the attention of policymakers and bank managers to the importance of considering the legal environment as a determining factor for the performance and proper functioning of the banking sector. As a practical implication, it emphasizes that the success of financial intermediation and, in particular, the expansion of credit in the economy, are strongly conditioned by legal factors, such as property rights and the rule of law, which often limit the enforcement of guarantees in cases of default.

With regard to the political implications, the study awakens policymakers and bank managers to the importance of considering the legal environment as a determining factor in the performance and functioning of the banking sector. As for practical implications, the study emphasizes that the success of financial intermediation, especially the expansion of credit in the economy, is conditioned by legal factors, which often limit the enforcement of guarantees in cases of default.

Contextualization of the Angolan Banking Sector

The historical evolution of the Angolan banking sector reflects the political and economic transformations of the country, since the country's independence in 1975. In the early years, a centralized economy model was adopted, in which banking activity was a monopoly of the State. In 1976, the National Bank of Angola (BNA) was created to perform the functions of central and commercial bank, while the Banco Popular de Angola operated in the capture of savings. In the 1990s, with the transition to a market economy, a profound reform of the financial sector in Angola was notable. In 1991, Law No. 5/91 on Financial Institutions established a two-tier banking system, allowing the entry of private commercial banks. This period saw the arrival of the first foreign banking institutions in Angola.¹

According to the Financial System Supervisory Council (CSSF), by the end of 2023, around 23 banks operated in Angola, spread across the 18 provinces. However, most bank branches were concentrated in Luanda (59%), Benguela (8%) and Malanje (7%). Recent data released by the BNA in February confirm that the number of banks authorized to operate in Angola has been reduced to 22.²

The relevance of the banking sector in the financial system is evidenced by its dominance in turnover. At the end of 2023, the banking sector accounted for approximately 88% of the financial system's turnover, while the securities market held only 7%, followed by the insurance and pensions sector, with 4.9%. The remaining 1% corresponded to the other non-bank financial institutions supervised by the BNA (CSSF, 2023).

In the period from 2015 to 2023, the banking's soundness indicators show a reduction in liquidity, measured by the ratio between net assets and total assets, which decreased by 4.4 percentage points (p.p.), standing at 35.30%. The same downward trend was observed in credit granted to the private sector over total credit, which changed from 92.8% in 2015 to 87.74% in 2023. On the other hand, credit risk, assessed by the ratio of non-performing loans to total loans, increased by 3.99 p.p., reaching 15.59%. In terms of efficiency, the cost-to-income indicator rose by 2.22 p.p., standing at 49.62%. Despite these challenges, the profitability of the banking sector remained positive, with the return on assets growing by 1.21 p.p., reaching 2.91%.³

Finally, the strengthening of lenders' confidence and the promotion of credit in the banking sector is based on Law No. 11/21, of 22 April 2021,⁴ which approves the Legal Regime of Movable Guarantees in Angola, which establishes the legal framework for the constitution, registration and enforcement of guarantees on movable property, aiming to facilitate access to credit and promote legal certainty in financial transactions. This legislation covers various types of guarantees, including pledges, financial assignments and retention of titles, and sets out the procedures for registering them with the competent authorities. In addition, the law provides mechanisms for the extrajudicial enforcement of guarantees in the event of default, speeding up the process of credit recovery by financial institutions.

The rest of the article unfolds as follows: Section 2 reviews the literature; Section 3 presents the data and methodology used; and Section 4 presents and discusses the results based on the existing literature. Finally, Section 5 concludes the article, pointing out directions for future research.

2. Literature Review

Property rights, the rule of law, regulatory quality and the strength of the legal system are significant determinants of bank credit expansion (Gani & Rasul, 2020). Sanga and Aziakpono (2022) analyzed the impact of institutional factors on financial deepening in 50 African countries and concluded that the rule of law has a positive and significant impact on bank credit. Likewise, Tehulu (2022) in his study on the expansion of credit in developing countries, concluded that when the rule of law is stronger, microfinance institutions increase the supply of loans, essentially because borrowers are less likely to become involved in moral hazard problems (Tehulu, 2022). In contrast, inefficient or bureaucratic legal structures increase the costs of defaults, litigation and regulatory compliance, limiting banks' ability to operate profitably (Demirgüç-Kunt et al., 2003; ElKelish & Tucker, 2015). A weakened legal environment is a barrier to the expansion of financial services and products (Fang et al., 2014; Hasan et al., 2009).

The study carried out by ElKelish and Tucker (2015) confirms that the quality of the legal framework positively affects banks' cost management efficiency and profitability. Adequate protection of creditors' rights, transparency of information and efficient mechanisms for enforcing guarantees help to reduce operating costs and promote trust between creditors and borrowers (Barth et al., 2009; Beck et al., 2006; Claessens et al., 2008). However, trust and transparency are key factors for the normal functioning of the banking sector (Jungo et al., 2024a).

Fang et al. (2014) studied how private property rights and the rule of law affect banking efficiency in China, and found that banks tend to operate more efficiently in environments where property rights and the rule of law are strong.

Pioneering studies on the relationship between the legal system and finance also confirm the direct relationship between improving the legal environment and improving the performance of financial institutions. This was true in the case of Levine (1998), who examined the relationship between the legal system and banking development and showed that

countries where the legal system prioritizes creditors' rights and strictly enforces contracts are more developed. With regard to capital market development, [La Porta et al. \(1997\)](#) have shown that countries where investors have less protection of property rights have less extensive and underdeveloped capital markets.

On the business side, [Johnson et al. \(2002\)](#) in their study on property rights and finance found that in environments where property rights are weak, companies disinvest even if they have access to finance or profits from the previous financial year. The protection of property rights is crucial to explaining the emergence, organization and survival of companies ([Krug & Hendrischke, 2003](#)).

More recent studies carried out by [Jungo et al. \(2024b\)](#) highlights the role of the rule of law on credit risk and banking stability in developing countries and showed that improving the rule of law reduces credit risk and improves banking stability. [Altaee et al. \(2024\)](#) showed that improving the rule of law is essential to increasing bank profitability. This is in agreement with the study by [Cumming et al. \(2010\)](#), who showed that legal protection and the quality of the legal system are important determinants of profitability. In the study on the influence of institutional factors on the impact of financial inclusion on bank stability by [Ha and Nguyen \(2023\)](#), the authors showed that the rule of law has positive effects on bank stability. Based on the above, we defined the following study hypotheses:

H1. *Improvement in property rights has a positive influence on bank profitability.*

H2. *The interaction between the rule of law and the property right are crucial to improving bank profitability.*

H3. *The effect of the legal environment on bank profitability differs depending on the level of profitability.*

On the other hand, [Twairesh and Bata \(2024\)](#) analyzed the determinants of bank profitability in Qatar, specifically studying the effect of credit risk, operational efficiency, capital adequacy and deposit ratio. The study suggests that bank profitability is negatively influenced by the deposit ratio, capital adequacy, credit risk and operational efficiency. The other approach, [Kusi et al. \(2016\)](#) showed that information sharing is beneficial to the profitability of the banking sector. However, [Dieler and Zhai \(2024\)](#) showed that information sharing is beneficial to the profitability of the banking sector.

Based on the brief literature review, we can conclude that the legal environment is essential for the normal functioning of the financial system and that it has a strong influence on banks' ability to monetize their assets.

3. Methodology

3.1. Data and Description

The study uses unbalanced panel data from a sample of 15 banks (See Appendix A Table A1) and a reference period from 2015 to 2023. Sample sizes were defined according to the availability of data in the years corresponding to our analysis and for all variables included in the study. Although we use only 15 banks, the sample is representative because there are only 22 banks in the banking sector; on the other hand, our sample includes the main banks of systemic relevance.

Data on bank-specific variables was collected from the financial statements of the respective banks, published in the annual reports and accounts; for macroeconomic variables, we used the data that were available and released by the National Statistics Institute (INE). Data on the legal system, such as the rule of law, were taken from the World Bank's Governance Indicators, and data on property rights were sourced from Heritage, both of

which are widely used in empirical studies (ElKelish & Tucker, 2015; Feghali et al., 2021; Jungo et al., 2023a).

The main variables studied are the profitability indicator return on assets (ROA) and legal system variables such as property rights (PR) and the rule of law (RL). To measure bank profitability, we favoured return on assets (ROA) or net income divided by total assets, which expresses the banks' ability to generate profits with the assets available, as in the study carried out by (Alkhazali et al., 2024; Blaga et al., 2024; Yakubu & Bunyaminu, 2024).

The property rights and rule of law variables were measured in the range 0 to 1, where values close to zero (0) represent weak property rights and rule of law and values close to one (1) indicate strong property rights and rule of law (ElKelish & Tucker, 2015; Jungo et al., 2024b). We consider property rights to be the legal right that a person or entity has over movable or immovable property, a tangible or intangible asset. This right gives the owner the ability to use, enjoy, sell, rent, transfer or dispose of the asset as they wish, within the limits established by law (ElKelish & Tucker, 2015). The rule of law, on the other hand, is much broader, or a fundamental legal and political principle that guarantees that everyone of any description, including the government, is subject to the country's laws, which must be applied fairly, impartially and consistently (ElKelish & Tucker, 2015; Feghali et al., 2021; Jungo et al., 2023a).

The study considers operational efficiency, asset quality, bank size, the interest rate, represented by Luibor, and the transformation ratio as control variables (Albaity et al., 2022; Jungo et al., 2022b). The macroeconomic environment is reflected by economic growth and inflation (Jungo et al., 2024b).

To measure operational efficiency in the use of resources, we use the cost-to-income ratio (Blaga et al., 2024), based on the assumption that high values of the ratio indicate that a greater proportion of revenue is being used to cover operating costs (Jungo et al., 2024b).

To assess asset quality, the study uses credit impairment, as this reflects actual and expected losses on loan portfolios due to default. The higher the impairment, the lower the bank's financial health and this variable is expected to have a negative effect on bank profitability (Golubeva et al., 2019; Ozili, 2023). The size of the bank was measured by the natural logarithm of the assets (Yakubu & Bunyaminu, 2024). The size of the bank can condition its performance and its ability to take risks (Albaity et al., 2022; Jungo et al., 2022b). To measure the cost of access to finance, we selected the LUIBOR (Luanda Interbank Offered Rate) interest rate with a maturity of one month.

LUIBOR (Luanda Interbank Offered Rate) is the Luanda interbank interest rate, used in Angola as a reference for transactions between banks and financial contracts. It is a rate defined on the basis of the interest applied by the main Angolan commercial banks in their lending operations on the interbank market.⁵

Financial intermediation in terms of volume was measured using the transformation ratio, which expresses the relationship between credit granted and deposits taken. The higher the transformation ratio, the greater the banks' profitability (Menicucci & Paolucci, 2016).

The macroeconomic variables used in the study are economic growth and inflation. The rationale for using macroeconomic variables such as GDP (Gross Domestic Product) and inflation as predictors of profitability lies in the direct relationship between the macroeconomic performance of an economy and the financial performance of companies, especially in the banking sector. These variables capture the economic environment in which institutions operate, influencing their ability to generate revenue, control costs and manage risks (Jungo et al., 2022b).

3.2. Model Specification

This study uses various panel data estimation techniques to assess the effect of the legal environment and bank profitability, while also evaluating the robustness of the estimation results. The study first employs the robust Ordinary Least Squares model and FGLS to control for problems related to heteroscedasticity, serial correlation and omitted variables. It then uses the instrumental variables technique to control for endogeneity and heterogeneity resulting from the fixed effects of each bank (Jungo et al., 2024a, 2024b).

We initially assumed that the private property rights variable is endogenous, which can be correlated with prediction errors. We consider population growth as an instrument, based on the assumption that the full functioning of legal institutions can be conditioned by the pressure of population growth (Jungo et al., 2022a). The Durbin, Wu-Hausman and GMM C-Statistic tests were applied to test for endogeneity, the results of which are presented at the end of the empirical results tables (Anderson & Rubin, 1950; Basman, 1960; Durbin, 1954; Hansen, 1982; Hausman, 1978). Thus, the model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (1)$$

where Y is the dependent variable or bank profitability, and the subscripts i and t represent the banking institution and time. The independent variables are represented by X_{it} .

The term μ and δ represent the bank-specific and time and term effects, respectively. The model's error term is represented by ε , the parameters β indicate the size of the model's effect.

4. Results

4.1. Pre-Estimation Tests

The results of the descriptive statistics are shown in Table 1. It is noteworthy that for the period analyzed, the average return on assets was 5%, while the average cost-to-income ratio (a measure of banking efficiency) was 45.4%. With regard to legal factors, property rights and the rule of law have an average below 50%, which indicates the weakness of legal indicators.

Table 1. Descriptive statistics.

	Description	Count	Mean	sd	Min	Max
ROA	Return on assets	125	0.050	0.049	0.000	0.355
EFFIC	Operational efficiency	121	0.454	0.181	0.149	0.950
QA	Quality of assets (Impairments)	125	1.903	2.015	0.006	11.290
SIZE	Natural logarithm of assets	133	12.562	1.601	7.292	15.328
RT	Transformation ratio	133	1.179	5.494	0.000	46.790
Luibor	Luanda Interbank Offered Rate	135	0.148	0.027	0.096	0.185
RL	Rule of law	135	0.158	0.015	0.129	0.181
PR	Property rights	135	0.318	0.095	0.150	0.411
RLPR	Terms of interaction	135	0.051	0.016	0.019	0.067
GDP	Economic growth	135	−0.005	0.024	−0.056	0.030
INFL	Inflation	135	0.223	0.080	0.139	0.411
PG	Population growth	135	0.034	0.002	0.031	0.036

Own elaboration. Note: RLPR is the product between the right to property and the rule of law.

The results of the linear correlation matrix, illustrated in Table 2, suggest that there is no evidence of multicollinearity problems. There is no strong correlation between the variables. We found that there is a significant linear correlation, although weak, between the dependent variable that is bank profitability and the variables property right, term of

interaction between property rights and rule of laws, operational efficiency, asset quality, size of banks and inflation. Thus, these will be the variables to be considered in the econometric model.

Table 2. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11
	ROA2	PR	RL	RLPR	EF	QA	SIZE	RT	Luibor	GDP	INF2
1	1.00										
2	−0.15 *	1.00									
	(0.07)										
3	0.02	0.28 ***	1.00								
	(0.86)	(0.00)									
4	−0.15 *	0.94 ***	0.56 ***	1.00							
	(0.09)	(0.00)	(0.00)								
5	0.90 ***	−0.10	−0.01	−0.11	1.00						
	(0.00)	(0.26)	(0.89)	(0.20)							
6	0.41 ***	−0.11	−0.02	−0.09	0.43 ***	1.00					
	(0.00)	(0.23)	(0.84)	(0.34)	(0.00)						
7	−0.27 ***	0.26 ***	0.16 *	0.26 ***	−0.31 ***	−0.11	1.00				
	(0.00)	(0.00)	(0.07)	(0.00)	(0.00)	(0.24)					
8	−0.02	0.06	−0.02	0.03	−0.02	−0.07	−0.11	1.00			
	(0.86)	(0.52)	(0.78)	(0.70)	(0.82)	(0.42)	(0.22)				
9	−0.03	0.41 ***	0.47 ***	0.47 ***	−0.08	−0.16 *	0.00	0.18 **	1.00		
	(0.70)	(0.00)	(0.00)	(0.00)	(0.38)	(0.08)	(0.97)	(0.04)			
10	−0.08	0.13	−0.48 ***	−0.05	−0.04	0.06	0.04	−0.01	−0.17 **	1.00	
	(0.35)	(0.13)	(0.00)	(0.55)	(0.67)	(0.53)	(0.65)	(0.94)	(0.05)		
11	0.22 **	−0.53 ***	0.29 ***	−0.45 ***	0.18 **	0.04	−0.09	−0.03	0.00	−0.45 ***	1.00
	(0.01)	(0.00)	(0.00)	(0.00)	(0.03)	(0.67)	(0.33)	(0.76)	(0.97)	(0.00)	

Note: *p*-values in parentheses * *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01; RLPR is the term of interaction between property rights and the rule of law.

Table 3 shows the result of the VIF (Variance Inflation Factor) test for multicollinearity, which suggests that there is no evidence of multicollinearity. This supports the fact that there are no strong correlations between the independent variables, except for the strong and significant correlation between the rule of law and the interaction term resulting from the product between property rights and the rule of law.

Table 3. Multicollinearity test.

Variable	VIF	1/VIF
PR	1.31	0.762432
INFL	1.29	0.778178
QA	1.13	0.884547
SIZE	1.1	0.907158
EFFIC	1.05	0.954206
Mean VIF	1.18	
Own elaboration		

When analyzing panel data, it is essential to examine the stationarity of the variables to avoid spurious regressions. To do this, we used three different tests, the Im Pesaran Shin (IPS), Fisher-Augmented Dickey–Fuller (F-ADF) and Fisher–Philip Perron (F-PP), which work efficiently on unbalanced panels (Jungo et al., 2022a). The results illustrated in Table 4 indicate that the variables used are integrated to order zero $I(0)$, meaning that the variables

are stationary, this is in line with the short period used in the study, i.e., the number of groups ($N = 15$) was greater than the time period ($T = 9$).

Table 4. Unit root test.

	IPS	F-ADF	F-PP
ROA	−3.119 ***	8.04 **	18.65 ***
EFFIC	−3.655 ***	9.654 ***	11.417 ***
QA	−5.885 ***	5.980 *	10.499 ***
SIZE	−2.919 ***	7.162 ***	7.241 ***
PR	−4.078 ***	3.222 ***	12.050 ***
RLPR	−14.701	19.062 ***	4.202 ***
INFL	−3.453 **	24.240 ***	10.458 ***
GDP	−2.025 **	3.795 ***	3.878 ***
Inflation	−7.329 ***	11.554 ***	10.954 ***

Own elaboration, conventional significance level of * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.2. Main Estimation Results

The main results are presented in Tables 5 and 6, which express the effect of the right to property on profitability and the effect of the term of interaction between the right to property and the rule of law, respectively. At the bottom of the two tables are the various post-estimation tests, with emphasis on endogeneity tests. The Durbin and Wu–Hausman test in Tables 5 and 6 presented statistically significant values, which support the idea of the existence of endogeneity and the need to use an instrumental variable.

The results shown in Table 5 reflect the effect of property rights on bank profitability, and the models also take into account bank-specific variables and macroeconomic variables. The results presented in Table 5 suggest that an improvement in property rights (PR) drives an increase in the profitability of Angolan banks, i.e., a 1% improvement in property rights drives a growth of about 0.138% in profitability (considering the IV-2SLS and IV-GMM instrumental variable models).

Table 5. Effect of property rights on bank profitability.

	OLS-Robust	FE	RE	FGLS	IV-2SLS	IV-GMM
	ROA	ROA	ROA	ROA	ROA	ROA
PR	0.0511 (0.155)	0.0202 (0.549)	0.0507 *** (0.001)	0.0511 (0.236)	0.138 ** (0.045)	0.138 *** (0.001)
EFFIC	−0.127 *** (0.000)	−0.113 ** (0.021)	−0.126 *** (0.000)	−0.127 *** (0.000)	−0.128 *** (0.000)	−0.128 *** (0.000)
QA	0.00001 (0.919)	−0.00020 ** (0.012)	−0.00007 (0.433)	0.00001 (0.938)	0.00001 (0.931)	0.00001 (0.907)
SIZE	−0.0152 *** (0.000)	−0.00486 (0.708)	−0.0148 *** (0.004)	−0.0152 *** (0.000)	−0.0162 *** (0.000)	−0.0162 *** (0.000)
INFL	0.0653 (0.380)	0.0798 (0.350)	0.0762 (0.350)	0.0653 (0.188)	0.109 * (0.056)	0.109 (0.176)
_cons	0.271 *** (0.000)	0.141 (0.366)	0.264 *** (0.000)	0.271 *** (0.000)	0.247 *** (0.000)	0.247 *** (0.000)
N	113	113	113	113	113	113
R ²	0.426	0.313	0.692			
F-Statistic	30.59 ***	7.46 ***				
wh2			103.19 ***	84.02 ***	83.79 ***	139 ***
Durbin					2.787 *	
Wu-Hausman					2.681 **	
GMM-C						4.579 **

p -values in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6. The effect of the term of interaction between private property rights and the rule of law.

	OLS-Robust	FE	RE	FGLS	IV-2SLS	IV-GMM
	ROA	ROA	ROA	ROA	ROA	ROA
RLPR	0.224 (0.264)	0.0502 (0.766)	0.236 *** (0.010)	0.224 (0.346)	0.714 ** (0.046)	0.714 *** (0.001)
EFFIC	−0.127 *** (0.000)	−0.113 ** (0.021)	−0.126 *** (0.000)	−0.127 *** (0.000)	−0.128 *** (0.000)	−0.128 *** (0.000)
QA	0.00001 (0.923)	−0.0002 *** (0.008)	−0.0001 (0.445)	0.00001 (0.940)	0.00001 (0.936)	0.00001 (0.915)
SIZE	−0.0151 *** (0.000)	−0.00369 (0.764)	−0.0146 *** (0.004)	−0.0151 *** (0.000)	−0.0161 *** (0.000)	−0.0161 *** (0.000)
INFL	0.0546 (0.468)	0.0743 (0.365)	0.0665 (0.405)	0.0546 (0.250)	0.0878 * (0.088)	0.0878 (0.269)
_cons	0.277 *** (0.000)	0.131 (0.386)	0.268 *** (0.000)	0.277 *** (0.000)	0.258 *** (0.000)	0.258 *** (0.000)
N	113	113	113	113	113	113
R ²	0.423	0.200	0.692			
F-Statistic	29.40 ***	7.38 ***				
wch2			85.91 ***	83.13 ***	83.27 ***	139.35 ***
Durbin					3623 *	
Wu-Hausmam					2.511 *	
GMM-C						4.579 **

p-values in parentheses * *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01; RLPR is the product between the right to property and the rule of law.

In Table 6, we control for the effect of the term of interaction between property rights and the rule of law (RLPR), keeping everything else constant, to assess the consistency of the results. The motivation for creating the term of interaction between the right to property and the rule of law is that the rule of law provides the necessary structure for the right to property to be respected, protected and exercised fairly and efficiently (Acemoglu & Johnson, 2005). The result of Table 6 also suggests that the interaction between property rights and the rule of law improves bank profitability. In terms of the impact dimension, there is a variation of 1% in the term of interaction between the right to property and the rule of law causes an increase of about 0.714% in bank profitability (considering the IV-2SLS and IV-GMM instrumental variable models).

The results reinforce the premise that improvements in the legal environment benefit the banking sector by promoting confidence and allowing banks to expand their credit portfolios, as well as increasing their recovery capacity in cases of default (Elkelish & Tucker, 2015; Dieler & Zhai, 2024). Thus, these results reinforce the theory that the weak protection of property rights is an important constraint for the banking sector, as has been empirically proven by Barth et al. (2009); Elkelish and Tucker (2015); Fang et al. (2014); La Porta et al. (1997).

Regarding bank-specific variables, operational efficiency (EFFIC) contributes negatively to bank profitability. This is in line with theoretical and empirical evidence, since an increase in costs indicates inefficiency in the management of resources. Previous studies by Twairesh and Bata (2024) and Yakubu and Bunyaminu (2024) suggest the negative impact of operational efficiency on profitability.

Additionally, we find that the size of the bank has negative effects on profitability, this may suggest that large banks have higher management costs and take on more risk compared to small banks. Study carried out by Yakubu and Bunyaminu (2024) found a similar result, negative effect of bank size on bank profitability.

As for the macroeconomic variables, the results indicate that inflation (INFL) has a positive and significant impact on bank profitability, although this result is not consistent in all the models used. This result converges with those presented in the study by Yakubu and Bunyaminu (2024) on the determinants of bank profitability in sub-Saharan Africa.

With regard to the effect of inflation on profitability, the results suggest beneficial effects on profitability, which may only occur in the short term, given that economic and financial theory consider inflation to be an indicator of uncertainty and an obstacle to consumption, in the long term it may promote default by reducing income.

Quantile Regression Results

The effect of the legal environment on profitability may not be the same for all banks, due to the possibility of heterogeneous distribution of profitability, so we used quantile regression to test the robustness of the results in different quantiles, as suggested by (Altaee et al., 2024), differentiating the impact along the conditional distribution of profitability (Q10, Q25, Q50 and Q75). The normality tests for the profitability variable are shown in Table 7, while the graph can be found in Appendix A Figure A1. We rejected the null hypothesis in favour of the alternative hypothesis, which expresses the non-normality of the income distribution; thus, we applied quantile regression analysis to mitigate the effect of outliers in the data.

Table 7. Test of normality.

Teste de Normalidade	Obs	W	V	Z	Prob
Shapiro–Wilk W test	113	0.747	23.154	7.017	0.000
Shapiro–Francia W' test	113	0.735	26.670	6.542	0.000
Teste de Skewness–Kurtosis	Obs	Skewness	Kurtosis		Prob. Ch2
	133	0.000	0.000		0.000

The result of the quantile regression, shown in Table 8, suggests that the effect of property rights on bank profitability is only statistically significant in the median quantile (Q50) and quantiles higher than the median (Q75), while for the quantiles less there was no statistical significance. This may indicate that more efficient and profitable banks are the ones that best take advantage of institutional improvements such as the protection of property rights, while less profitable banks may be more constrained by other factors, such as operational inefficiency or financial constraints.

Table 8. Quantile regression on the effect of property rights.

	Q10	Q25	Q50	Q75
PR	0.0301 (0.152)	0.028 (0.247)	0.060 *** (0.009)	0.1205 *** (0.001)
EFFIC	−0.089 *** (0.000)	−0.086 *** (0.001)	0.100 *** (0.000)	−0.130 *** (0.000)
QA	0.0002 (0.511)	0.0001 (0.504)	0.0002 (0.648)	0.00001 (0.987)
SIZE	−0.005 * (0.059)	0.006 ** (0.010)	0.011 *** (0.001)	−0.016 *** (0.000)
INFL	0.0007 (0.985)	0.031 (0.482)	0.006 (0.864)	0.022 (0.552)
const	0.111 ** (0.020)	0.1446 *** (0.004)	0.203 (0.000)	0.289 *** (0.000)
N	113	113	113	113
Pseudo R ²	0.177	0.218	0.275	0.357

p-values in parentheses * *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01.

4.3. Discussion

The results of this study confirm that property rights have a positive influence on bank profitability in Angola. Furthermore, the interaction between property rights and the rule of law amplifies the impact of legal factors on banking profitability, corroborating the theory that these two elements are complementary (Acemoglu & Johnson, 2005). Both contribute to improving the performance of the banking sector. Thus, the results indicate that the legal environment in Angola plays an essential role in optimizing the functioning of the banking sector, by strengthening confidence in financial intermediation and reducing banks' aversion to granting credit. This confirms the arguments put forward in the studies carried out by ElKelish and Tucker (2015); Fang et al. (2014); Gani and Rasul (2020); Hasan et al. (2009); Jungo et al. (2024b); La Porta et al. (1997); Tehulu (2022).

The banking sector operates directly on the basis of legal certainty, predictability and transparency, so improving the legal environment, specifically property rights and the rule of law, can favour the banking sector through channels, given as follows: (1) strengthening investor confidence and promoting greater business stability (Johnson et al., 2002; Krug & Hendrischke, 2003; La Porta et al., 1997); (2) reduced costs associated with fewer resources and time spent on resolving credit recovery litigation and other contractual disputes (Cumming et al., 2010); (3) an efficient legal system makes it easier to enforce guarantees and allows credit to be granted more securely (ElKelish & Tucker, 2015; Gani & Rasul, 2020; Tehulu, 2022); (4) in addition, clearer and more stable regulations allow banks to operate in a more predictable and competitive environment, promoting not only the attraction of national and international investment, but also innovation in the financial sector, as is the case with fintechs (Aysan et al., 2021; Banna & Alam, 2021); Finally, (5) legal certainty is delivered by providing greater protection for new technologies and business models, contributing to the modernization of the sector and its reputation in the domestic and foreign markets, increasing the confidence of clients, creditors and the general stability of the financial system (Yakubu & Bunyaminu, 2024).

5. Conclusions

Sustainable economic growth in any economy depends heavily on the ability of the financial system to provide the economy with financial resources (Jungo, 2024; Saha & Dutta, 2022). On the other hand, the poor quality of institutional factors is a major barrier to the full operation of banks (Tehulu, 2022).

The main objective of this study is to examine the relationship between the legal environment and the profitability of the Angolan banking sector, specifically to highlight the influence of property law and the rule of law on banking profitability, in a representative sample of 12 banks over the period from 2015 to 2023.

The results of the study argue that improvements in property rights and the rule of law are external factors with a major influence on bank profitability. This confirms the theory initiated by Beck et al. (2006), Demirgüç-Kunt et al. (2003), and Levine (1998), who maintain that the legal system is one of the factors external to banks that should not be ignored. As a political implication, the study awakens policymakers and bank managers, in general, to the need to consider the legal environment for better performance and normal functioning of the banking sector. As a practical implication, the study emphasizes that the success of financial intermediation, and, in particular, the need to expand credit, has the legal system as its main barrier, which has negatively affected enforcement and guarantees, along with trust and transparency.

In practical terms, the study recommends the reform of the property registration system, with a focus on promoting transparency, accessibility and reducing bureaucracy in the registration process. In addition, it highlights the importance of strengthening

the independence of the judiciary, ensuring the efficiency of the courts and the impartial application of laws, especially in cases related to contractual disputes and credit recovery. Another essential measure is the continuous investment in training and qualification programmes for professionals in the legal sector, with an emphasis on issues related to financial law. For the future, it is recommended to deepen the study on the relationship between macroeconomic and institutional factors in the performance of banks.

The study is limited by the fact that it does not include all the banks that exist in the banking sector, as well as the use of a very short study period in the analysis.

Author Contributions: Conceptualization, J.J. and C.F.C.-V.; Methodology, J.J.; Software, J.J.; Validation, C.F.C.-V.; Formal Analysis, J.J.; Investigation, J.J. and C.F.C.-V.; Resources, J.J. and C.F.C.-V.; Data Curation, J.J.; Writing—preparation of original draft, C.F.C.-V.; Writing—revision and editing, J.J.; visualization, J.J. and C.F.C.-V.; Supervision, J.J. and C.F.C.-V.; Project Administration, J.J.; Funding, J.J. All authors have read and agreed to the published version of the manuscript.

Funding: This work was financially supported by the research unit on Governance, Competitiveness and Public Policy (UIDB/04058/2020), funded by national funds through FCT—Fundação para a Ciência e a Tecnologia.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: We declare that the data source are described in text. The data support the findings of this study are available from the first author upon reasonable request.

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

Appendix A

Table A1. Banks in the sample.

BAI	Banco Angolano de Investimento, SA
BFA	Banco de Fomento Angola, SA
BIC	Banco BIC, SA
BMA	Banco Millenium Atlântico, SA
SBA	Standard Bank de Angola, SA
SOL	Banco SOL, SA
BCGA	Banco Caixa Geral de Angola, SA
BCI	Banco de Comércio e Indústria, SA
BNI	Banco de Negócio Internacional, SA
FNB	Finibanco, SA
VTB	Banco VTB África, SA
BCA	Banco Comercial Angolano, SA
BIR	Banco de Investimento Rural, SA
BVB	Banco Valor, SA
BCH	Banco Comercial do Huambo, SA

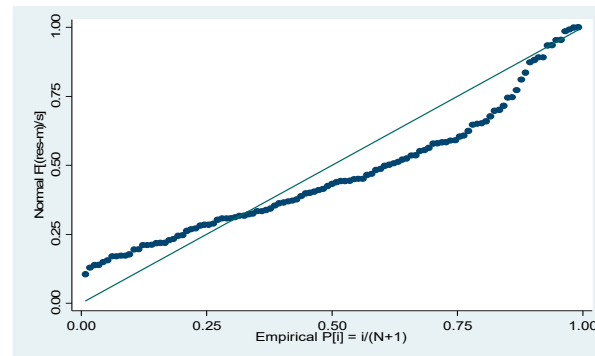


Figure A1. Normality test graph.

Notes

- ¹ <https://abanc.ao/evolucao-historica> (accessed on 26 February 2025).
- ² <https://www.bna.ao/#/pt/supervisao/politica-macprudencial/inst-financeiras-autorizadas> (accessed on 26 February 2025).
- ³ <https://www.bna.ao/#/pt/supervisao/politica-macprudencial/indicadores-solidez-financeira> (accessed on 26 February 2025).
- ⁴ <https://www.bna.ao/#/pt/legislacao-e-normas/legislacao-financeira/lei-regime-juridico-garantias-mobiliarias> (accessed on 26 February 2025).
- ⁵ www.bna.ao (accessed on 26 February 2025).

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