Non-Performing Loans, Bank Size, GDP, Exchange Rates, Inflation, And Interest Rates In Spain

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Abstract

This study looks into how economic factors affect non-performing loans.The European Central Bank (ECB) is the source of the secondary data used in this study. utilizing quantitative techniques and the VECM (Vector Error Correction Model). Non-performing loans (NPL), bank size, GDP, currency rates, inflation, and interest rates are all used in this study. We found that Non-performing loans in the past have encouraged an increase in current non-performing loans. Of particular interest is the relationship between bad loans and GDP. GDP encourages problem loans. However, non-performing loans actually put pressure on GDP. Likewise, inflation puts pressure on non-performing loans. However, non-performing loans pushed up inflation. In a similar vein, the exchange rate promotes non-performing loans; the stronger the currency, the more non-performing loans promote an expansion of credit. The poorer the currency rate, however, the greater the amount of non-performing loans. Interest rates encourage problem loans and vice versa. And bank size has a reciprocal relationship with problem loans.

Keywords: Non-Performing Loans, Bank Size, GDP, Exchange Rates, Inflation, Interest.
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Background

One of the industries related to macroeconomics is the banking industry, this is because the banking industry is very sensitive to the economic conditions of a country. If the economy of a country is developing, the banking industry can also develop. On the other hand, the economic condition that is currently experiencing a crisis can have an impact on the banking industry. Banking has an important role in the economy of a country (Brychko, Bilan, Lyeonov, & Mentel, 2021).

A bank is a type of financial organization that serves as a bridge between parties with surplus cash and others who lack it. One source of bank income is interest derived from lending to the public (Disemadi, 2019). In channeling credit to the public, banks do not rule out credit risk. Because not all loans granted to customers can be collected on time but there are also loans that are not smoothly repaid or can be classified as bad credit. Credit risk is the risk that is caused by the debtor's inability to fulfill his obligations requested by the creditor (Ramadhanti, Marlina, & Hidayati, 2019).

Credit risk to banks is seen from their bad credit. The cause of NPL can be seen from the weakness of banks in analyzing and supervising credit distribution as well as moral factors where banks do not apply prudential principles and do not apply unhealthy banking practices (Diebold & Yilmaz,2015). NPL is one of the indicators in assessing the performance of bank functions, high NPL shows the low health of the bank because there are still many bad loans in bank activities. Large bad debts in the banking industry have a wide impact that will harm banks (Haryanto, Chandrarin, & Bachtiar, 2019). Non-performing loans are influenced by two factors, namely macroeconomic and microeconomic factors. Macroeconomic factors affecting non performing loans include growth in the GDP and interest rates. And microeconomic factors viewed from banking fundamentals include a return to assets (ROA), credit growth, and allowance for credit losses. Bad credit is credit that can cause problems, not only for banks as credit providers but also for customers who receive credit (Arham, Salisi, Mohammed, & Tuyon, 2020).

The foreign exchange market, which is always open 24 hours a day, except on weekends, and is made up of several sorts of currency dealers, determines exchange rates. Currency exchange rates are largely influenced by the exchange of capital goods and services in international trade. The local currency will depreciate, resulting in more expensive imports that will put a strain on commercial banks' merchant credit financing and raise the chance of default (Shonhadji, 2020).

GDP growth shows an increase in individual income as well as an increase in firms, Therefore, the credit increases and the impact is that NPLs decrease. Conversely, the decline in GDP shows that individual income also increases in companies so that the ability to pay the debt (credit) also decreases and NPLs have increased. The quality of loans declines as interest rates rise, and it becomes harder for borrowers to repay their debts as credit interest rates rise. Thus it can be interpreted that the higher the interest charged to debtors, the more likely it will increase non performing loans. The association between interest rates and non performing loans can also be explained by the diminished ability of borrowers to fulfill their commitments. Financial System Stability plays an important role in the economy (Khan, Siddique, & Sarwar, 2020).

The financial system plays a very important role in the economy in line with its function of channeling funds from parties that have funds (surplus of funds) to parties who need funds (lack of funds). If the financial system does not work properly, the economy becomes inefficient and the expected economic growth will not be achieved. Therefore, the sustainability of the implementation of national development is greatly influenced by the stability and strength of the financial system (Sugianto, Oemar, Hakim, & Endri, 2020).

The term risk or risk is a loss for the loss of money or other valuables. This is closely related to business management, where there is a process of forecasting (forecasting) the decision making that you will do in the future. Good financial risk management is one of the important components of comprehensive financial planning. Risk is one of the things or elements that must be present and carefully considered when we are making financial planning. Many things can happen in life, some have good effects, some are not good. There are those that pose risks to physical, mental, and so on, others have financial effects (Shaheen, Ağa, Rjoub, & Abualrub, 2020).

Liquidity risk is the risk that occurs when a party cannot pay its maturing obligations in cash even though that party has an asset that is sufficiently valuable to pay off its obligations, but when the asset is said to be illiquid. Liquidity is the uncertainty or possibility that the company will not be able to meet its short-term obligations or unexpected expenses. This risk occurs when the company is short of cash because all capital is in the form of securities, buildings, etc.

This risk creates bankruptcy for the business. Credit risk is the risk that the buyer on credit is unable to pay the debt (Kaddumia & Al-Kilani, 2020).

Non performing loans are away or a key for a bank to assess whether the bank's function is working well or not. There are several sorts of bank customers; the first type is a customer who pays off credit promptly, while the second type is a client who does not pay off credit promptly, resulting in poor credit. The huge rise in the NPL percentage ratio is a result of bad credit. Non performing loans or commonly known as NPLs are non performing loans that are one of the keys to assessing the quality of bank performance (Kartikasary, Marsintauli, Serlawati, & Laurens, 2020).

Interest rates are indeed a source of bank income which if the bank no longer accepts installments according to a predetermined period of time, it is feared that this will continue to worsen the bank's condition. Factors that trigger NPLs in financial institutions (Resmawan, 2021). Many of the factors that often trigger this problem include the impact of a difficult crisis dimensions that until now have made many of the bank debtors unable to solve their bad credit problems. Another factor that often triggers this problem is the lack of good faith from the debtors to immediately resolve this problem. As a result, it is not uncommon for banks or institutions finances will receive the impact of the condition (Hynes, Trump, Love, & Linkov, 2020).

The high-interest rates often become a heavy burden for debtors to settle their obligations to the bank, so that they are unable to complete loans according to the agreements that have been made (Rogoff, 2022). Knowing the ins and outs of what a non-performing loan is, it seems that it is not enough in the world of banking. To keep the bank in a safe condition, a good management system really needs to be implemented optimally. Through good management in various bank operational activities, especially for matters related to credit, will help maintain the stability of conditions in the bank (Park & Kim, 2020). This study looks into how economic factors affect non-performing loans in Spain.

Research methods

The European Central Bank (ECB) is the source of the secondary data used in this study. utilizing quantitative techniques and the VECM (Vector Error Correction Model). Non-performing loans (NPL), bank size, GDP, currency rates, inflation, and interest rates are all used in this study with the following equation:

$$NPL = \beta_0 + \beta_1 GDP_{t1} + \beta_2 INF_{t2} + \beta_3 EX_{t3} + \beta_4 Ir_{t4} + \beta_5 BS_{t5} + e_t$$
$$INF = \beta_0 + \beta_1 GDP_{t1} + \beta_2 NPL_{t2} + \beta_3 EX_{t3} + \beta_4 Ir_{t4} + \beta_5 BS_{t5} + e_t$$
$$GDP = \beta_0 + \beta_1 NPL_{t1} + \beta_2 INF_{t2} + \beta_3 EX_{t3} + \beta_4 Ir_{t4} + \beta_5 BS_{t5} + e_t$$
$$EX = \beta_0 + \beta_1 GDP_{t1} + \beta_2 INF_{t2} + \beta_3 NPL_{t3} + \beta_4 Ir_{t4} + \beta_5 BS_{t5} + e_t$$
$$BS = \beta_0 + \beta_1 GDP_{t1} + \beta_2 INF_{t2} + \beta_3 EX_{t3} + \beta_4 Ir_{t4} + \beta_5 NPL_{t5} + e_t$$

Where:
NPL = Non Performing Loan
GDP = Gross domestic product
INF = Inflation rate
Ir = Interest rate
EX = Exchange rate
BS = Bank Size
ui = Error rate
β_0 = Intercept

β_1, β_2, β_3, β_4, β_5 = The independent variable's coefficient value
e_t = Error Term

Results and Discussion

Stationary testing needs to be done to ensure there are no problems related to data stationarity with the stationarity test outcomes shown in table 1.

Table 1. Stationarity Test Results

	Level		**First Different**	
	Prob.	**Description**	**Prob.**	**Description**
NPL	0.1331	not fulfil	0.0000	fulfil
GDP	0.0003	Fulfil	0.0000	fulfil
INF	0.0021	fulfil	0.0000	fulfil
EX	0.2117	not fulfil	0.0000	fulfil
Ir	0.0009	fulfil	0.0000	fulfil
BS	0.2111	not fulfil	0.0000	fulfil

Information: 5% probability

Based on the test results in table 1. There are no problems related to data stationarity. Determination of the optimum lag is carried out to determine the optimum lag for the most optimal results of testing the relationship between variables with the test outcomes shown in table 2.

Table 2. Results of Optimal Lag Test

Lag	**LR**	**FRE**	**AIC**
0	NA	19901212	36.1121
1	278.4711	11121121	29.3211
2	178.2112	10312711	28.1121
3	71.6114	1221142	26.3221
4	33.7627	711221	**21.5112***

Note: The lowest AIC value is shown by an asterisk and bold type.

Based on the test results in table no. 2. The optimum lag is at lag 4. It is important to perform a cointegration test using the test results shown in table 3 in order to determine the use of the Vector Error Correction Model (VECM).

Table 3. Results of a Cointegration Test

	Eigenvalue	**T- Stat.**	**0,05 Crit. Value**	**Prob.**
None*	0.611211	138.4121	58.7221	0.0000
At most 1*	0.491611	76.15226	46.7222	0.0000
At most 2*	0.491123	49.7726	28.6112	0.0001
At most 3*	0.296524	17.3911	14.3811	0.0021

Information: 5% probability

Since it can be shown from the outcomes of the test in table 3 that the variable displays cointegration, the VECM test may be run using the test results presented in table 4.

Table 4. VECM Result

	NPL	GDP	INF	EX	Ir	BS

NPL	0.841217	0.000211	-0.004112	0.004212	0.017121	0.012711
	(0.01121)	(0.00109)	(0.00241)	(0.00779)	(0.01227)	(0.02322)
	[3.07211]	[0.12211]	[-0.41512]	[0.57111]	[1.26113]	[0.51171]
GDP	-0.691121	0.711132	-0.069171	0.231421	0.042217	-0.372111
	(0.39211)	(0.01121)	(0.06232)	(0.17821)	(0.17211)	(0.64111)
	[-1.49211]	[39.4112]	[-0.71278]	[1.71322]	[0.11541]	[-1.71122]*
INF	-0.623113	0.011241	0.672411	0.123211	0.423246	0.291122
	(0.29421)	(0.01871)	(0.05911)	(0.14923)	(0.13421)	(0.51131)
	[-1.07932]*	[1.06921]	[11.7223]	[1.05922]	[2.14114]*	[0.31212]
EX	-0.004117	-0.006913	-0.012271	0.162227	0.025511	0.114412
	(0.23249)	(0.00662)	(0.03351)	(0.05262)	(0.07129)	(0.1424)
	[-0.02941]	[-1.01833]	[-0.41421]	[13.1472]	[0.29211]	[0.82231]
Ir	0.192217	0.004911	0.073411	-0.071765	0.392239	-0.031131
	(0.16917)	(0.00843)	(0.02954)	(0.06923)	(0.12371)	(0.29411)
	[1.23411]	[0.47114]	[1.92211]*	[-1.07113]	[3.65432]	[-0.06911]
BS	-0.106211	0.004123	-0.014522	-0.104251	-0.108711	-0.029531
	(0.10721)	(0.00611)	(0.01925)	(0.04913)	(0.06929)	(0.19159)
	[-1.06931]	[0.49116]	[-1.08711]	[-1.95231]*	[-1.46628]	[-0.15925]
C	6.224112	0.154223	1.190399	-0.197115	-0.921121	5.711212
	(2.41179)	(0.10491)	(0.39928)	(1.07582)	(1.51149)	(3.92614)
	[3.20531]	[1.09533]	[1.72755]	[-0.18224]	[-0.52424]	[1.48613]
R-sq.	0.882211	0.881421	0.842411	0.877112	0.821121	0.811268
Adj. R-sq.	0.873311	0.871073	0.837722	0.861192	0.794211	0.804711

Non performing loans in the past had a significant positive impact on current non performing loans. The interesting thing is the relationship between defaulted loans and GDP. GDP encourages non performing loans. However, non performing loans alone depress GDP. Likewise, inflation put pressure on non performing loans. However, non performing loans encourage inflation. In a similar vein, the exchange rate promotes defaulted loans; the stronger the currency, the more non performing loans support credit expansion. The poorer the currency rate, however, the greater the amount of defaulted loans. Interest rates and defaulted loans are strongly correlated with one another. Additionally, non performing loans and bank size are inversely correlated.

Conclusion

The number of current defaulted loans has increased as a result of defaulted loans in the past. Of particular interest is the relationship between bad loans and GDP. GDP encourages problem loans. However, non performing loans actually put pressure on GDP. Likewise, inflation puts pressure on non performing loans. However, non performing loans pushed up inflation. In a

similar vein, the exchange rate promotes defaulted loans; the stronger the currency, the more non performing loans promote an expansion of credit. The poorer the currency rate, however, the greater the amount of defaulted loans. Interest rates encourage problem loans and vice versa. And bank size has a reciprocal relationship with problem loans.

References

Arham, N., Salisi, M. S., Mohammed, R. U., & Tuyon, J. (2020). Impact of macroeconomic cyclical indicators and country governance on bank non performing loans in Emerging Asia. Eurasian Economic Review, 10(1), 707-726.

Brychko, M., Bilan, Y., Lyeonov, S., & Mentel, G. (2021). Trust crisis in the financial sector and macroeconomic stability: A structural equation modelling approach. Economic Research-Ekonomska Istraživanja, 34(1), 828-855.

Diebold,F.X., Yilmaz,K.(2015).Financial and Macroeconomic Connectedness: A Network Approach to Measurement and Monitoring. Oxford : Oxford University Press

Disemadi, H. S. (2019). Risk Management In The Provision Of People's Business Credit As Implementation Of Prudential Principles. Diponegoro Law Review, 4(2), 194-208.

Haryanto, S., Chandrarin, G., & Bachtiar, Y. (2019). Bank Size, Risk and Market Discipline with A Deposit Insurance: Evidence of Banking in Indonesia. AFRE (Accounting and Financial Review), 2(2), 81-90.

Hynes, W., Trump, B., Love, P., & Linkov, I. (2020). Bouncing forward: a resilience approach to dealing with COVID-19 and future systemic shocks. Environment Systems and Decisions, 40(1), 174-184.

Kaddumia, T., & Al-Kilani, Q. (2020). The effect of liquidity risk management on the Jordanian financial sector–the proxy of commercial banks. International Journal of Innovation, Creativity and Change, 14(1), 240-253.

Kartikasary, M., Marsintauli, F., Serlawati, E., & Laurens, S. (2020). Factors affecting the non performing loans in Indonesia. Accounting, 6(2), 97-106.

Khan, M. A., Siddique, A., & Sarwar, Z. (2020). Determinants of non performing loans in the banking sector in developing state. Asian Journal of Accounting Research, 5(1), 135-145.

Park, H., & Kim, J. D. (2020). Transition towards green banking: role of financial regulators and financial institutions. Asian Journal of Sustainability and Social Responsibility, 5(1), 1-25.

Ramadhanti, C., Marlina, M., & Hidayati, S. (2019). The effect capital adequacy, liquidity and credit risk to profitability of commercial banks. Journal of Economics, Business, and Government Challenges, 2(1), 71-78.

Resmawan, H. (2021). The Effect of Non-Performing Loan and Loan to Deposit Ratio on Return on Assets at PT. Bank Mandiri, Tbk Period 2011-2020. Kontigensi: Jurnal Ilmiah Manajemen, 9(1), 42-50.

Rogoff, K. (2022). Emerging Market Sovereign Debt in the Aftermath of the Pandemic. Journal of Economic Perspectives, 36(4), 147-66.

Shaheen, R., Ağa, M., Rjoub, H., & Abualrub, A. (2020). Investigation of the pillars of sustainability risk management as an extension of enterprise risk management on palestinian insurance firms' profitability. Sustainability, 12(11), 1-10.

Shonhadji, N. (2020). What Most Influence on Non-Performing Loan in Indonesia? Bank Accounting Perspective with Mars Analysis. Journal of Accounting and Strategic Finance, 3(2), 136-153.

Sugianto, S., Oemar, F., Hakim, L., & Endri, E. (2020). Determinants of firm value in the banking sector: Random effects model. International Journal of Innovation, Creativity and Change, 12(8), 208-218.