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The Impact of Institutional Environment on the Asset Quality of Banks: A Study in Upper-Middle-Income Countries

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Kurumsal Ortamın Bankaların Varlık Kalitesi Üzerine Etkisi: Yüksek Orta Gelirli Ülkelerde Bir Araştırma	**The Impact of Institutional Environment on the Asset Quality of Banks: A Study in Upper-Middle-Income Countries**
Öz Takipteki krediler, bankalarda varlık kalitesinin önemli bir göstergesidir. Bu çalışmada, 2010-2019 döneminde üst orta gelirli ülkelerde kurumsal ortamın takipteki krediler üzerindeki etkisi dinamik panel veri analizi yöntemiyle araştırılmaktadır. Yapılan analizler neticesinde elde edilen bulgulara göre, kurumsallık takipteki krediler üzerinde önemli düzeyde negatif bir etki oluşturmaktadır. Takipteki kredilerin gecikmeli değeri ise mevcut dönem takipteki krediler üzerinde pozitif yönde etkilidir. Ayrıca kontrol değişkenleri açısından ekonomik büyüme ve faiz dışı gelirler takipteki krediler üzerinde negatif etkili iken kredi/mevduat oranı ve enflasyonun etkisi pozitiftir.	**Abstract** The Non-Performing Loans (NPLs) are a significant indicator of asset quality in banks. In this study, the impact of the institutional environment on NPLs in upper-middle-income countries during the period of 2010-2019 is investigated using the dynamic panel data analysis method. According to the findings obtained from the analyses, institutional quality has a significantly negative effect on NPLs. The lagged value of NPLs, on the other hand, positively influences the current period's NPLs. Additionally, concerning control variables, economic growth and non-interest income negatively affect NPLs, while the credit/deposit ratio and the inflation rate have a positive impact on NPLs.
Anahtar Kelimeler: Varlık Kalitesi, Takipteki Krediler, Kredi Riski, Kurumsal Ortam, Üst-Orta Gelirli Ülkeler	**Keywords:** Asset Quality, Non-performing Loans, Credit Risk, Institutional Environment, Upper Middle-Income Countries
JEL Kodları: C23, E60, G21	**JEL Codes:** C23, E60, G21

Araştırma ve Yayın Etiği Beyanı	Bu çalışma bilimsel araştırma ve yayın etiği kurallarına uygun olarak hazırlanmıştır.
Yazarların Makaleye Olan Katkıları	Tamamı yazar tarafından hazırlanmıştır.
Çıkar Beyanı	Yazarlar açısından ya da üçüncü taraflar açısından çalışmadan kaynaklı çıkar çatışması bulunmamaktadır.

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1. Introduction

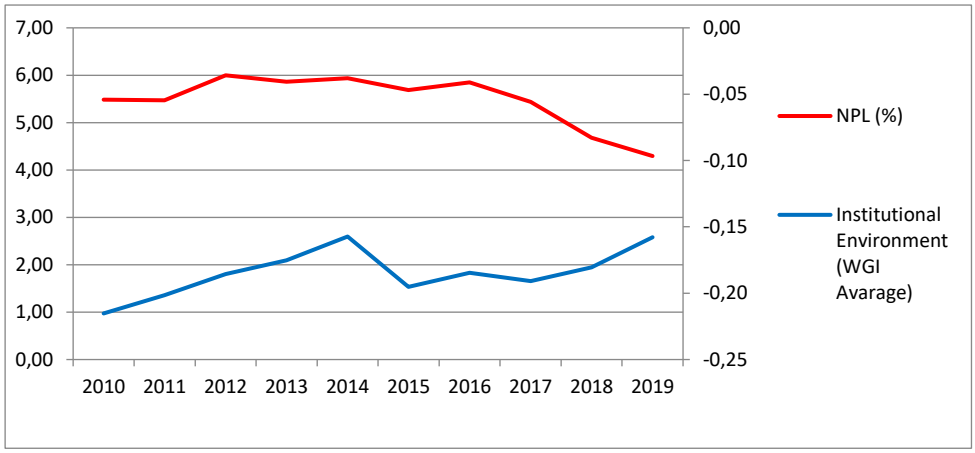
Banks, which are one of the essential elements of the financial system, are exposed to many risks arising from both their own structure and external factors. Credit risk is one of these risks, perhaps the most important one, due to the relatively high weight of loan portfolios in bank assets. Non-performing loans (referred to as NPL hereinafter) are one of the most critical indicators of banks' credit quality and asset quality. For banks to operate effectively and efficiently there is undoubtedly a need for an effective credit system that acts as an intermediary between the supplying and demanding sectors, playing a vital role in providing the necessary capital for investments. NPL is one of the leading indicators of problems in this system. This is because a rapid increase in NPL can negatively affect the profitability of banks, leading to disruptions in the system, and perhaps even a liquidity crisis that may result in bankruptcy (Bayar, 2019). For instance, Demirgüç-Kunt & Detragiache (1998), González-Hermosillo (1999), Samad (2012), and many other studies have shown that rapid and sudden increases in NPLs play a major role in banking crises. Thus, according to the general consensus in the finance literature, it is possible to say that the intensive and rapid increase in NPL is one of the primary causes of banking crises.

The health of the banking system, which provides the capital required for investments, is crucial for national economies. Hence, the proper functioning of the credit system is a matter of close concern for the real economy. The impact of the real economy on NPLs is typically elucidated through the financial soundness of borrowers. However, NPLs typically exert their influence on the real economy through the conduit of credit supply. NPL, which is one of the main activities of banks, may have a significant negative impact on their profitability and lead to a contraction in credit supply. For instance, Klein (2013) and Kjosevski and Petkovski (2017) have investigated both the determinants of NPL and the effects of NPL on the real economy, revealing the negative effects of NPL on the real economy. Investigating the factors affecting NPL, which is a fundamental problem for the banking system and consequently for the economies of countries has been one of the main topics of interest for lenders and policymakers for many years. As mentioned in the literature section of this study, the factors affecting NPL have been investigated with bank-specific, sector-specific, and macroeconomic indicators.

Johnson and Wilson (2000) draw attention to the importance of sustainable institutionalism and governance and argue that in societies with a weak tradition of democracy and civil discipline, decision-makers may face pressure from rent-seeking interest groups. According to Creane et al. (2004), in institutionally weak countries where there is no rule of law and bureaucracy, and political institutions are corrupt, problems arise in the repayment of loans. This situation causes creditors to be reluctant to supply loans. According to Boudriga (2010), the institutional environment, including controlling corruption, political stability, government accountability, and judicial and administrative framework, has essential effects on the financial system. Therefore, in institutionally weak societies, it negatively affects the competitiveness of the market and causes the credit mechanism to become inefficient. Hence, it is possible to say that the lending process is carried out inefficiently in institutionally weak societies.

Upper-middle-income countries have not yet been included in the high-income class but are in the group closest to this class. For these countries to get out of the so-called *middle-income trap*[2] and enter the high-income class, an efficient and healthy banking system is needed. In this respect, it is of great importance to reduce NPLs in these countries to guarantee the efficiency of the financial system and to provide the necessary capital for investments. To achieve this reduction, the factors affecting NPL should first be well identified.

Figure 1: Non-Performing Loans and Institutional Indicators in Upper-Middle-Income Countries in 2010-2019



Source: Compiled with data from WGI and GFD databases by the author

Figure 1 displays the improvement of NPL and institutionalization in upper-middle-income countries between 2010-2019. In the figure, the first ax. shows the development in the NPL level, and the second ax. displays the development in the institutional environment. When the figure is analyzed, the NPL in the relevant countries was around 5.5% in 2010. Until 2014, the NPL increased slightly to approximately 6% but decreased to 4.3% by the end of 2019. The level of institutionalization in these countries was -0.22 in 2010. Until 2014, the level of institutionalization was on an upward trend but started to decline slightly after 2014. As of 2017, it entered an upward trend again, and in 2019, it reached the level of -0.16, which was the level in 2014. Considering that the average score of the Worldwide Governance Indicators[3] (WGI), which is considered a holistic indicator of the institutional environment in countries, is between -.2.5 and +2.5, the weakness of the institutional environment in the countries concerned is striking. It should also be noted that after 2015, the institutional environment started to improve, and NPL started to decline.

As stated earlier, real economic growth depends on a healthy financial system. For a healthy financial system, it is necessary to reduce NPL. This makes it very important to ensure efficiency in the financial system by lowering NPL in upper-middle-income countries that aspire to move to a higher-income group.

[2] It refers to the inability to move forward after reaching a certain level of per capita income and remaining stuck at that level.

[3] For details, see Kaufman et al. (2010).

As stated in the literature section of the study, there are relatively few studies on the effects of the institutional environment on NPL, which has the potential to significantly affect the financial sector. As far as we are aware, there is no study on the impact of the institutional environment on NPL in upper-middle-income countries. Accordingly, this study aims to examine the nexus between the institutional environment and NPL in these countries. In line with this purpose, the study is designed in four sections. The first section summarizes studies investigating the factors affecting NPL and the relationship between NPL and the institutional environment. The second section introduces the data set, model, and methodology of the study. After the analysis the impact of the institutional environment on NPL using a dynamic panel data estimator. In the fourth and final section of the study, the findings are discussed in the light of other studies, and policy recommendations are presented.

2. Literature Review

NPL, which is accepted as one of the key indicators for the functioning of the financial system efficiently, has been intensively researched in the finance literature for many years. In the early days, NPL has only been investigated in line with bank-specific factors. However, as the interaction between NPL and macroeconomic conditions has become increasingly evident, the importance of investigating the issue in terms of macroeconomic indicators has increased. Accordingly, in recent years, NPL has been investigated through both micro and macro determinants. One of the first studies to investigate NPL is the study by William and Charles (1987). Analyzing the causes of NPL in commercial banks operating in the US, the authors revealed the significant effects of local economic conditions arising from sectoral differences in NPL. According to the authors, the losses of banks that take higher risks also increase in line with the risk they take. Louzis et al. (2012) delved into the micro and macro drivers of NPL across retail, business, and mortgage loans. Their analysis revealed that the factors influencing NPL may vary depending on the loan type. However, in all loan portfolios, interest rates and unemployment exhibited a positive impact, whereas economic growth had a negative influence on NPL. Swamy (2012) scrutinized the macro and micro determinants of NPL in Indian banks. The results indicated that the loan-to-deposit ratio, cost of funds, and per capita income had adverse effects on NPL, while profitability had a positive impact. Additionally, the findings suggested that large-scale and foreign banks outperformed other banks in terms of credit quality. De Bock and Demyanets (2012) conducted research on banks' susceptibility to external shocks in developing countries and found that an increase in the exchange rate, coupled with a decrease in economic growth, trade, and capital flows, led to higher NPL. Ćurak et al. (2013) researched the macro and micro determinants of NPL in Southeastern European banking systems and noted that inflation, real interest rate, and lagged value of NPL have positive effects on NPL, while economic growth, solvency, profitability, and bank size have adverse effects on NPL. Jakubik and Reininger (2013) examined the determining factors of NPL in Europe. As a result of the analysis, the national stock market index and economic growth have a negative effect on NPL, while past NPL, exchange rate, and private sector loans/GDP have a positive impact on NPL. Messai and Jouini (2013) also reached similar results for three European countries (Italy, Spain, and Greece). They investigated the determining micro and macro factors of NPL in banks operating in these countries. According to the analysis, economic growth and bank profitability have a negative effect on NPL, while unemployment, real interest rate, and loan loss provisions/total loans

ratio have a positive impact on NPL. Škarica (2014) examined the determinants of NPL in Central and Eastern Europe and determined that unemployment rate and inflation have a positive effect on NPL, while economic growth has a negative effect on NPL. Makri et al. (2014) investigated the determinants of NPL in the Eurozone in the pre-crisis period. According to the findings, the lagged value of NPL, unemployment, and public debt burden have an effect on NPL positively, while profitability, capital adequacy, and economic growth have an effect on NPL negatively. Islamoğlu (2015) researched the impact of loan interest rates and public debt burden on NPL in the Turkish banking system. As a result of the analysis, it was understood that the decrease in loan interest rates and the increase in public debt burden positively affect NPL in the long run. Ghosh (2015) investigated the determinants of NPL in the US states. According to the analysis, loan growth rate, inflation rate, operational inefficiency (mismanagement), and unemployment have a positive effect on NPL, while economic growth and income growth have a negative impact on NPL.

Dimitrios et al. (2016) examined the determinants of NPL in the banking system in the Euro area. According to the analysis, deposit/loan ratio, individual income tax, unemployment, lagged value of unemployment, and lagged value of NPL positively affect NPL. Although there is a positive relationship between public debt burden and NPL, this relationship is not statistically strong. Moreover, the output gap, economic growth, and profitability indicators have a negative effect on NPL. Abdioğlu and Aytekin (2016) researched the determinants of NPL in the Turkish banking system. According to the findings, the lagged value of NPL, capital adequacy, net interest margin, and solvency have a negative effect on NPL, while loan-to-deposit ratio, loan interest rates, inefficiency, and operating efficiency have a positive impact on NPL. Işık and Bolat (2016) stated in their study investigating the factors affecting NPL in deposit banks in Turkey that profitability, income diversification, and economic growth have a negative effect on NPL, while the global financial crisis, loan loss provisions, and capital adequacy have a positive effect on NPL. Kjosevski and Petkovski (2017) investigated the macro and micro determinants of NPL in the Baltic countries in their studies. According to their analysis, the lagged value of NPL, unemployment, and credit growth have a positive effect on NPL, while capital adequacy, profitability, and economic growth have a negative effect on NPL. In Ozili's (2019) study, the impact of financial development (foreign bank presence and financial intermediation) on NPL was investigated in a sample of 134 countries during the period 2003–2014. According to the results of the analysis, it was determined that financial development has a positive effect on NPL. The author found that when financial development occurs in the form of the presence of foreign banks and greater financial intermediation, non-performing loans increase. In comparison to other variables, bank efficiency, loan loss coverage ratio, competition, and banking system stability have a negative impact on NPL, while banking crises and bank concentration show a positive effect on NPL. Al Masud & Hossain (2020) analyzed the bank-specific and macroeconomic determinants of NPL in Bangladesh using data from 22 banks for the period 2007-2016 through the GMM method. According to the findings of the analysis, ROA has a negative impact on NPL, while GDP growth rate, inflation, real interest rate, unemployment, and stock prices have a positive effect on NPL. Ahmed et al. (2021) conducted an in-depth investigation into the micro and macro determinants of NPLs in Pakistani commercial banks for the period 2008-2018 using the system GMM method. According to the results of the analysis, lagged NPL, credit growth, net interest margin, loan loss provision, and bank diversification, political risk as well as increases in interest rates and exchange significantly increase NPLs. On the

other hand, operational efficiency, bank size, and GDP growth significantly reduce NPLs. Erdas and Ezenaoglu (2022) investigated bank-specific factors affecting NPL in G-20 countries and reported that lagged value of NPL, return on equity, loan growth, and cost of credit have a positive effect on NPL, while capital adequacy and economic growth have a negative effect on NPL.

As summarized above, many studies have been conducted on a global scale to investigate the macro and micro determinants of NPL. Although some of these studies have yielded different results, they have generally reached similar conclusions. In terms of micro determinants, indicators such as bank size, capital adequacy, solvency, and profitability generally create an effect to reduce NPL. Factors such as loan growth, loan cost, and loan/deposit ratio generally have a positive effect on NPL. In terms of macroeconomic indicators, factors such as public debt, lending interest rate, inflation, and unemployment generally increase NPL. The impact of economic growth on NPL is generally negative.

It is noteworthy that there are relatively few studies on the relationship between the institutional environment (rule of law, property rights, transparency, democracy, anti-corruption, government effectiveness, regulatory quality, etc.) and NPL. In one of these studies, Qian and Strahan (2007) investigated the effects of institutional factors such as information sharing, creditor rights, etc., on property rights and the lending process in 43 countries. As a result of the analyses, they reported that institutionalization reduces the riskiness of banks and provides lending opportunities with longer maturities and more favorable interest rates. Boudriga et al. (2010) examined the micro, macro, and institutional determinants of NPL in deposit banks in MENA countries. According to the results of the study, participation of developed foreign countries, depth of information about loans, level of institutionalization, return on assets, size, and loan growth have a negative effect on NPL. In contrast, the lagged value of loan loss provisions has a positive impact on NPL. Zeng (2011), who considers NPL as "Financial Pollution" regarding economic growth and social welfare, also investigated NPL and its effects in China. According to the findings, it was emphasized that governance efforts, property rights, and policies to reduce asymmetric information should be increased to reduce NPL. Ahmad (2013) researched the determining factors of NPL in Pakistani banks. As a result of the analysis, although there is a positive relationship between corruption and NPL, this relationship is not statistically significant. However, reducing asymmetric information about loans (information sharing), economic growth, and lending rates negatively and significantly affects NPL. Tanasković et al. (2015) investigated the macroeconomic and institutional determinants of NPL in CEEC and SEE countries for the period 2006-2013. In the study, indicators of institutionalization, such as the strength of auditing and reporting standards, financial market developments, and the soundness of the banking system, were used. The research found that financial market development had a negative impact on NPL, indicating that more developed financial markets had a mitigating effect on non-performing loans. Bayar (2019) researched the micro, macro, and institutional determinants of NPL in developing countries. The findings show that public debt burden, unemployment, credit growth, crises, and the lagged value of NPL have a positive effect on NPL, while economic growth, inflation, economic freedom (institutional development), capital adequacy, profitability, and primary income ratio have a negative effect on NPL. Alnabulsi et al. (2022) conducted a study using data from 74 banks in 11 MENA countries spanning the period 2005–2020 to investigate the influential micro and macro factors, as well as the effects

of the institutional environment on NPL, employing the GMM method. According to the analysis findings, the institutional environment has a significant impact on NPL, comparable to bank-specific and macroeconomic factors. These studies are among the recent examples of the effects of institutional factors on NPL.

When the results of the studies on the subject are evaluated together, institutionalization generally has a dampening effect on NPL. Therefore, investigating the relationship between the institutional environment and NPL is important for the efficiency and stability of countries' financial systems. Based on this importance, this study focuses on the impact of institutionalization on NPL

3. Methodology

3.1. Data Set-Model-Methodology

This study investigates the effects of institutional factors on NPL with annual data of countries that fall into the category of upper-middle-income countries according to the World Bank income classification in the 2010-2019 periods. The start and end years of the research were determined in line with criteria such as creating a balanced panel data set, the 2008 global financial crisis, and the Covid-19 pandemic. Finally, a balanced panel data set was created with ten-year data from eighteen countries (Albania, Armenia, Brazil, Bulgaria, Guatemala, Costa Rica, Ecuador, Georgia, Dominican Republic, Mexico, Moldova, North Macedonia, Russian Federation, Paraguay, Peru, South Africa, Thailand and Turkey) whose data were available in the relevant period.

Many studies have shown that past period values of NPL, which was used as an indicator of NPL in this study, have an impact on current period NPL (see: Louzis et al., 2012; Bayar, 2019; Al Masud and Hossain, 2020; Ahmed et.al., 2021; Alnabulsi et.al. 2022; Erdas and Ezenaoglu, 2022). Thus, using the dynamic panel data estimator in this study was determined appropriate. Among these estimators, the Two-Step System GMM, which is considered to be the most recent and advanced version, is a very powerful estimator against endogeneity, heteroskedasticity, and autocorrelation problems among variables. Therefore, this method was preferred as the analysis method in the study. The basic explanatory variable of the study is the level of institutionalization. To represent this level, the average of six governance indicators that are regularly standardized between -2.5 and 2.5 every year within the scope of Worldwide Government Indicators (WGI) was used. An increase in these indicators towards + 2.5 indicates an increase in the level of institutionalization (governance level), while a decrease towards -2.5 indicates a reduction in the level of institutionalization.[4] The variables preferred in the study were determined due to the empirical and theoretical literature review and are presented in Table 1.

[4] For details, see Kaufman et al. (2010).

Table 1: Variables of the Study

Variable Code	Studies Researched	Expected Impact	Calculation Method	Source
NPL (Dependent)	(De Bock and Demyanets, 2012; Louzis et al., 2012; Ćurak et al. 2013; Dimitrios et al., 2016; Ozili, 2019; Al Masud and Hossain, 2020; Ahmed et.al., 2021; Erdas and Ezenaoglu, 2022)	Positive	Bank NPL to gross loans (%)	GFD
GOV	(Boudriga et al., 2010. Alnabulsi et.al.,2022)	Negative	The average of the governance indicators.	WGI
CDR	(Swamy, 2012; Makri et al., 2014; Dimitrios et al., 2016; Abdioğlu and Aytekin, 2016; Ozili, 2019; Erdas and Ezenaoglu, 2022)	Positive	Bank credit to bank deposits (%)	GFD
CAP	(Makri et al., 2014; Ghosh, 2015; Kjosevski and Petkovski, 2017; Erdas and Ezenaoglu, 2022)	Negative	Bank capital to total assets (%)	GFD
CPI	(Makri et al., 2014; Ghosh, 2015; Işık and Bolat, 2016; Kjosevski and Petkovski, 2017; Bayar, 2019)	Positive	Inflation, consumer prices (annual %)	WDI
EG	(Swamy, 2012; De Bock and Demyanets, 2012; Bayar, 2019; Erdas and Ezenaoglu, 2022)	Negative	GDP per capita growth (annual %)	WDI
GD	(Louzis et al., 2012; Makri et al., 2014; Ghosh, 2015; Dimitrios et al., 2016; Bayar, 2019)	Positive	General government gross debt to GDP (%)	IMF
NINT	(Ozili, 2019; Ahmed et.al., 2021; Alnabulsi et.al.,2022)	Negative	Bank non-interest income to total income (%)	GFD
ROA	(Boudriga et.al., 2010; Messai and Jouini, 2016; Al Masud and Hossain, 2020; Ahmed et.al., 2021)	Negative	Bank return on assets (%, after tax)	GFD

GFD: Global Finance Development
IMF: International Monetary Fund
WDI: World Development Indicators
WGI: Worldwide Governance Indicator

Table 2: Descriptive Statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
NPL	180	5.469443	4.766864	1.193125	23.49278
GOV	180	-0.1844139	0.3401931	-0.7870165	0.6835601
CDR	180	109.9	36.02303	50.37444	226.6642
CAP	180	10.78501	2.689156	5.768679	20.23823
CPI	180	3.986945	2.850506	-1.418184	16.33246
EG	180	2.840568	2.533426	-4.358317	9.823415
GD	180	37.16456	16.43274	10.105	87.87
NINT	180	33.61061	12.12646	13.89624	95.42103
ROA	180	1.438556	0.7282336	-0.01	5.91

When Table 2, which includes descriptive statistics for the variables, is analyzed, it is seen that the average NPL ratio in upper-middle-income countries was 5.46% in the 2010-2019 period. The average inflation rate is approximately 4%. The average public debt burden is

around 37%. The share of non-interest income in total revenue averages around 33.6%, while the average return on assets stands at 1.4%. The variable with the highest standard deviation is the loan-to-deposit ratio. Furthermore, the largest range in terms of minimum and maximum values is the capital ratio.

Table 3: Correlation Matrix

	NPL	GOV	CDR	CAP	CPI	EG	GD	NINT	ROA
NPL	**1.0000**								
GOV	0.0204	**1.0000**							
CDR	-0.4435	0.4077	**1.0000**						
CAP	0.2232	0.0829	0.0700	**1.0000**					
CPI	-0.1252	-0.2228	0.0842	0.0386	**1.0000**				
EG	0.0324	0.0693	0.0625	0.3370	-0.0520	**1.0000**			
GD	0.0777	0.2954	-0.1603	-0.0402	-0.1653	-0.1810	**1.0000**		
NINT	-0.0706	-0.2073	-0.0044	0.0156	0.1896	-0.1226	-0.2060	**1.0000**	
ROA	-0.2478	-0.0484	0.1145	0.0950	-0.0686	0.2432	-0.2888	-0.0843	**1.0000**

When the literature on NPL is examined; it appears that NPL is generally investigated through bank-specific and macroeconomic factors. There are a limited number of studies investigating the impact of institutionalization on NPL. However; as seen in the findings of the studies conducted by Boudriga et al. (2010), Ahmad (2013), Ahmed et al. (2021), and Alnabulsi et al. (2022), institutionalization has a significant impact on the stability of the financial system. Based on this importance, the main purpose of the study is; the aim is to investigate the impact of institutionalization on NPL in upper-middle-income countries that need stability in the financial system significantly to enter the category of high-income countries. For this purpose, the hypothesis of the research is;

Hypothesis: Institutionalization has a negative impact on NPL in upper-middle-income countries.

To investigate the impact of institutional factors on NPL and test the research hypothesis, the research model has been designed as follows in light of the relevant empirical literature;

Research Model:

$$NPL_{it} = \alpha_0 + \beta_1 NPL_{it-1} + \beta_2 GOV_{it} + \beta_3 Z_{it} + u_{it} \quad \textbf{(1)}$$

In the equation, i is the countries (i=1,2, ... N), t is the period of analysis (t=1, 2, ...T) α_0 is model constant, Z is control variables, and u_{it} shows the error term. Besides, β's indicate the impact of the explanatory variable on the explained variable.

In line with the created analysis model, various model specifications were developed for the consistency of the results and analyzed with the Two-Step System GMM method. The findings obtained as a result of the analyzes are presented in Table 4.

Table 4: Analysis Results

Dep. NPL	Model 1.1	Model 1.2	Model 1.3	Model 1.4	Model 1.5	Model 1.6	Model 1.7	Model 1.8	Model 1.9	Model 1.10	Model 1.11	Model 1.12
NPL_{t-1}	1.214***	1.233***	1.308***	1.306***	1.233***	1.225***	1.209***	1.174***	1.211***	1.218***	1.239***	1.244***
	(0.091)	(0.058)	(0.082)	(0.070)	(0.057)	(0.056)	(0.062)	(0.059)	(0.080)	(0.069)	(0.064)	(0.074)
GOV	-1.090	-1.875**	-1.319**	-1.139*	-1.312*	-1.301**	-1.262***	-1.102***	-1.048***	-1.851***	-1.552**	-1.399**
	(0.995)	(0.738)	(0.614)	(0.652)	(0.740)	(0.535)	(0.435)	(0.379)	(0.432)	(0.652)	(0.734)	(0.664)
CDR		0.022***	0.025***	0.024***	0.020***	0.020***	0.020***	0.018***	0.019***	0.021***	0.021***	0.020***
		(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.004)	(0.003)	(0.004)	(0.006)	(0.006)	(0.005)
CAP			-0.160**	-0.149**	-0.064	-0.059	-0.073	-0.054				
			(0.068)	(0.063)	(0.062)	(0.063)	(0.058)	(0.053)				
CPI				0.092**	0.075**	0.076**	0.069**	0.073**		0.096**	0.080**	
				(0.040)	(0.035)	(0.034)	(0.034)	(0.031)		(0.049)	(0.032)	
EG					-0.114**	-0.106**	-0.102*	-0.108**	-0.151***		-0.120**	-0.132**
					(0.055)	(0.053)	(0.053)	(0.049)	(0.048)		(0.061)	(0.058)
GD						0.006	0.010	0.010		0.016		
						(0.016)	0.13	0.009		(0.019)		
NINT							-0.020*	-0.020*	-0.020***			
							(0.011)	(0.011)	(0.007)			
ROA								0.058	0.052			
								(0.135)	(0.202)			
Cons.	-1.363**	-4.118***	-2.981***	-3.330***	-3.086***	-3.38***	-2.621***	-2.466***	-2.548***	-4.898***	-3.879***	-3.565***
	(0.557)	(0.929)	(0.909)	(0.794)	(1.011)	(1.202)	(0.903)	(0.712)	(0.950)	(1.171)	(0.768)	(0.719)
Wald p.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of Ins.	11	12	7	8	12	13	14	15	12	10	11	10
Ar(2)	0.331	0.291	0.335	0.236	0.300	0.294	0.318	0.319	0.391	0.208	0.277	0.369
Hansen T.	0.192	0.199	0.431	0.547	0.201	0.166	0.179	0.226	0.310	0.213	0.202	0.302
Number of Obs.	162	162	162	162	162	162	162	162	162	162	162	162

In this method, some diagnostic test results should be evaluated before evaluating the analysis findings. According to the results of Wald, Ar(2), and Hansen test;, the models are significant as a whole, there is no second-order serial autocorrelation and the instrumental variables are exogenous.

Table 4 reveals that the lagged value of NPL has a positive and significant effect on the current period NPL. This result shows that the past period effects of NPL have the potential to affect future periods as well as the accuracy of constructing the model as a dynamic model. In almost all models, institutionalization has a statistically significant and negative effect on NPL. This result indicates that policies developed to increase institutionalization in countries significantly reduce the level of NPL. In terms of control variables, inflation and loan/deposit ratio generally have a positive effect on NPL, while GDP per capita, non-interest income, and capital adequacy have a negative effect on NPL. In addition, public debt burden, and return on assets do not have a statistically significant effect on NPL.

4. Conclusions, Discussion and Policy Recommendations

Loan portfolios are one of the assets with the largest share in banks' assets. They are the most important representative of the financial sector, especially in developing countries, bringing together those who supply and demand funds. The financial performance of these institutions is a matter of close concern for the real economy. Therefore, stability in the banking sector is very important for macro stability. In this regard, many studies have been conducted to investigate stability in the financial sector and its determinants. NPL is one of the most important indicators of lending, thus, financial performance in banking. In fact, this indicator has been utilized in many studies in the literature (see: Louzis et al., 2012; De Bock and Demyanets, 2012; Ćurak et al. 2013; Dimitrios et al., 2016; Bayar, 2019; Erdas and Ezenaoglu, 2022 etc.).

As a result of the analysis, a statistically significant and negative effect of the institutional environment on NPL was noted. These results are directly consistent with the study of Boudriga et al. (2010), who determined a negative relationship between NPL and the institutional environment through the indicators also used by us as explanatory variables. Bayar (2019) also examined the effects of the institutional environment on NPL but used the economic freedom index as an indicator of institutionalism. This study also concluded that institutionalization has a negative effect on NPL. Therefore, the findings are also consistent with this study. On the flip side, even though it resonates with Alnabulsi et al.'s (2022) research regarding corruption control and the supremacy of law, it diverges when it comes to political risk. This result can be explained by the fact that the development of the institutional environment increases competitiveness, transparency, accountability, etc., in the market and enables the credit mechanism to work more effectively and efficiently. This is because creditors are more likely to face important issues such as adverse selection and moral hazard in societies with weak institutionalization. Due to the weak institutional environment and pressures, loans may be granted to customers who should not be granted under normal conditions, and payment problems may arise. This can lead to many problems for banks, particularly liquidity problems.

Moreover, significant relationships were also determined for the control variables, consistent with the expectations of the analysis. Inflation has a positive and significant effect on NPL. This finding is consistent with Al Masud and Hossain (2020); Škarica (2014) and Ćurak et al. (2013) but not with Bayar (2019). However, as Bayar (2019) explains, the effect of

inflation on NPL is generally evaluated in two different ways. First, decreasing real income during inflationary periods may cause significant disruptions in loan repayments. On the other hand, since the real cost of borrowing decreases during inflationary periods, inflation may relieve loan repayments. This finding is consistent with the first explanation. Economic growth, on the other hand, has a negative effect on NPL in line with most of the studies in the literature (Swamy, 2012; De Bock and Demyanets, 2012; Ćurak et al. 2013; Jakubik and Reininger, 2013; Messai, and Jouini, 2013; Ahmad, 2013; Makri et al., 2014; Škarica, 2014; Ghosh, 2015; Isik and Bolat, 2016; Kjosevski and Petkovski, 2017; Bayar, 2019; Ahmed et.al., 2021; Erdas and Ezenaoglu, 2022). According to the general acceptance in the literature, economic vitality leads to a decrease in NPL, while economic recession leads to an increase in NPL and defaults. The finding is consistent with this view.

The analysis revealed that bank capital has a negative impact on NPL. This result is consistent with the findings of Makri et al. (2014), Abdioğlu and Aytekin (2016), and Erdaş and Ezenaoğlu (2022). This result is generally explained by the *moral hazard hypothesis* proposed by Berger and De Young (1997). According to this hypothesis, banks that do not have strong capital adequacy may attempt to finance risky projects due to moral hazard incentives. This attempt leads to an increase in NPL. According to another finding of the study, an increase in the loan-to-deposit ratio has a positive effect on NPL. This finding is consistent with the findings of Abdioğlu and Aytekin (2016) and Erdas and Ezenaoglu (2022). In the literature, this relationship is explained by the fact that the easing of credit standards and interest rates by banks that increase loan rates leads to an increase in NPL.

Income diversification of banks, i.e. non-interest income, has a negative impact on NPL. This result can be explained by the risk-reducing effect of non-interest income through diversification in banking income. Because banks with higher non-interest income are seen as less dependent on interest income. This result is consistent with the studies of Özili (2019), Ahmed et al. (2021); Alnabulsi et al. (2022) is inconsistent with their study.

When the analyses are evaluated together, it is seen that institutionalization has significant effects on NPL. The NPL-reducing impact of institutionalization demonstrates the importance of improving the institutional environment for stability in banks and, thus, in the financial system. Based on this result, policymakers in the relevant countries are recommended to make structural reforms and develop policies to improve the institutional environment (the rule of law, fight against corruption, increase transparency and accountability, develop effective regulatory policies, protect and strengthen property rights, etc.).

One of the important determinants of asset quality in the banking sector is the ownership structure. Because the sector being completely under state control may increase the political pressure on banks. This may lead to an increase in risk in banks and a decrease in credit efficiency. This study specifically focused on upper-middle-income countries. Although the levels are different, all these countries have private and foreign banking activities. For this reason, the impact of ownership structure on asset quality has not been investigated. This issue can be considered one of the limitations of the research. In future studies, the impact of ownership structure on the asset quality of banks, along with the institutional environment, can be investigated through a different sample.

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