

## The Study of the Banking Industries in Haiti

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**ABSTRACT:** The main objective of this study is to find out and examine the determinants of banks' profitability in Haiti. The sample is a data set of the eight banks operating in Haiti for the period 2017 to 2021. The results prove that, among the independent variables that impact banks profitability in Haiti significantly and positively, Equity-to-total assets (EA ratio), which is used to proxy capital adequacy in this study, is the strongest. In addition, diversification is the second most influential independent variable in terms of positive effect. Average yield on loans does not show any significant impact on ROA and ROE. In contrast, the efficiency ratio, which is used to proxy management efficiency, has a significant negative effect on banks' profitability in Haiti. Like wise, Nonperforming loans (NPL), which is the measure of asset quality, and Liquid Assets -to-Deposit (LAD), a proxy for liquidity, show a negative influence on banks' profitability. The macroeconomic variables do not have any effect on banks' profitability in Haiti. The private banks are more profitable than the public one. And there are significant differences between those two groups.

**KEYWORDS:** Capital adequacy, Asset quality, Management efficiency, ROA and ROE

### 1. INTRODUCTION

Over the period 2012-2021, the Haitian economy has performed poorly, with an average growth of 0.38%. Nevertheless, over the same period, the sub-sector financial activities and insurances, which the banks dominate, increase by 5% on average. Plus, the banking system's average Return on Assets (ROA) and Equity (ROE) are, respectively, 2.03 % and 25.22 % over the same period. This last number is impressive considering that an ROE of 20 % is the standard. To explain this contrast, some argue that the interest rates on the BRH bonds with maturities of 91 days contribute significantly to the banks' profitability (Augustin and Prophète, 2019). In addition, others mention that the banks diversify their revenues by generating more and more noninterest income (Jocelyn, 2020).

In this context, this study aims to find out the determinants of banks' profitability in Haiti. The European Central Bank (ECB) recognizes that the following traditional performance measures for banks are the most common: ROA, ROE, and Cost-to-Income ratio (European Central Bank, 2010). Several studies, such as (Brahmaiah and Ranajee, 2018) have considered ROA and ROE to determine a bank's profitability. On the one hand, Return on Assets is a metric that indicates a company's profitability in relation to its total assets. On the other hand, Return on Equity (ROE) tells how efficiently a company's management generates income and growth from its equity financing. Therefore, in this research, the performance of the banks operating in Haiti are measured by those two variables.

In this study, the dependent variables can be categorized into bank specific and macroeconomic variables. There are seven banks specific variables. One is bank size, and the remaining are part of CAMEL (Capital adequacy, Asset quality, Management, Earnings, and Liquidity) ratios. Adopted in 1979 by the Federal Financial Institutions Examination Council (FFIEC) under the name Uniform Financial Institutions Rating System (UFIRS), CAMEL is a supervisory rating system to assess a bank's overall condition. Regarding the macroeconomic variables, this paper considers inflation rate and exchange rate fluctuations.

The objectives of this study include the following:

1. To find out which factors influence the profitability of the banks operating in Haiti.
2. To determine whether bank-specific or macroeconomic variables have either a significant positive or negative relationship with banks' profitability.
3. To determine which CAMEL ratios representing the bank-specific variables have a significant positive relationship with banks profitability.
4. To figure out which category of banks displays a better performance.
5. To find out if diversification has a positive and significant impact on banks profitability.
6. To find out the impact of intermediation on banks profitability.

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## 2. RESEARCH APPROACH AND SOURCE OF DATA

As stated earlier, the objective of this study is to determine the factors influencing banks' profitability in Haiti. The sample is a five-year dataset consisting of all eight banks operating in Haiti over the period 2017 to 2021. In Haiti, the fiscal year starts on October 1st of each year and ends on September 30th of the following year. We divide banks into two groups based on their ownership using the dummy variable: bank ownership. The groups are public banks and private banks. There are 2 public sector, 6 private sector banks, one of which is a foreign one, operating in Haiti. The analyses in the paper require data for bank-specific variables and macroeconomic variables.

Regarding the bank-specific variables, the dataset shows the quarterly value for the Return on Assets (ROA), Return on Equity (ROE) and the other bank-specific variables for each of the eight banks during a period of five years. Hence, the number of observations for each variable is N=160. With respect to the macroeconomic variables, the dataset depicts the quarterly value for the Return on Assets (ROA) and Return on Equity (ROE) of the banking system, as well as the inflation rate and the exchange rate fluctuations of the country during a period of five years. The number of observations for each variable is N=20.

The sources used in this study are reliable and officially recognized in Haiti. Data for bank-specific variables were retrieved from the website of the central bank of Haiti. The latter regularly publishes the quarterly financial statements of the banks while calculating some financial ratios related to the performance of banking system. Regarding the macroeconomic variables, the exchange rate fluctuations data were collected from the website of the central bank of Haiti, and data concerning inflation were pulled from both IHSI's website, an independent government institution authorized to publish statistics, and the central bank of Haiti.

## 3. HYPOTHESIS AND VARIABLES

In this section, we summarize the hypothesis, the variables, and their expected effects on banks' profitability.

**Table 1. Hypothesis**

NUMBER	HYPOTHESIS
H1	Equity to total assets ratio has a significant positive effect on banks profitability in Haiti
H2	NPL ratio has a significant negative relationship with banks profitability in Haiti
H3	An increase in the efficiency ratio has a significant negative effect on at least one of the measures of banks' profitability.
H4	An increase in average yield on loans has a significant positive impact on at least one of the measures of banks' profitability.
H5	An increase in diversification has a positive effect on at least one of the measures of banks' profitability.
H6	LAD ratio has a significant negative effect on at least one of the measures of banks' profitability.
H7	Bank size has a positive relationship with banks profitability
H8	There is a negative relationship between inflation and banks' profitability measures.
H9	There is a positive relationship between bank ownership and banks' profitability.

**Source:** From this Research

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**Table 2. Variables and Expected Effect on Banks' Profitability**

Variables	Measurement	Expected relation
<b>Profitability indicators (Dependent variables)</b>		
ROA	Net income to average total assets	
ROE	Net income to average total equity	
<b>Bank specific (internal factors)</b>		
EA ratio	Equity to total assets	+
NPL ratio	Non-performing loans less loan loss provisions to gross loans	
Efficiency ratio	Operating expenses to net banking income	
Yield on loans	Interest income on loans to average gross loans	+
Diversification	Other income to net banking income	+
LAD ratio	Most Liquid assets to deposit	
Bank size	Natural log of total assets	+
Bank Ownership	0: Public Bank; 1:Private Banks	+
<b>Macroeconomic (External factors)</b>		
Inflation	Inflation growth rate	
Exchange rate	Exchange rate fluctuations	?

Source: From this Research

## 4. RESEARCH RESULTS

Table 3 shows the result of the Pearson Correlation conducted without filtering Bank Ownership. This table shows that all the independent variables have a significant correlation with Return on Assets (ROA). In contrast, the independent variables that demonstrate a significant correlation with Return on Equity (ROE) are EA ratio, NPL, Average Yield on Loans, Bank Size and Bank Ownership. In all the cases mentioned above the P-value is less than 0.05, which justifies the significance.

**Table 3 Pearson Correlation: Bank-Specific Variables**

		<b>Correlations</b>									
		ROA	ROE	EA ratio	NPL ratio	Efficiency Ratio	Average Yield on Loans	Diversification	LAD ratio	Bank Size	Bank Ownership
ROA	Pearson Correlation	1	.128	.426**	-.310**	-.508**	.270**	.307**	-.174*	.263**	.202*
	Sig. (2tailed)		.106	.000	.000	.000	.001	.000	.028	.001	.011
	N	160	160	160	160	160	160	160	160	160	160
ROE	Pearson Correlation	.128	1	.221**	-.191*	-.066	.156*	.105	-.031	.170*	.191*
	Sig. (2tailed)	.106		.005	.015	.408	.048	.188	.700	.031	.016
	N	160	160	160	160	160	160	160	160	160	160
EA ratio	Pearson Correlation	.426**	.221**	1	-.890**	-.498**	.727**	.235**	-.261**	.514**	.583**
	Sig. (2tailed)	.000	.005		.000	.000	.000	.003	.001	.000	.000
	N	160	160	160	160	160	160	160	160	160	160
NPL ratio	Pearson Correlation	-.310**	-.191*	-.890**	1	.390**	-.779**	-.413**	.112	-.483**	-.738**
	Sig. (2tailed)	.000	.015	.000		.000	.000	.000	.159	.000	.000
	N	160	160	160	160	160	160	160	160	160	160

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Efficiency Ratio	Pearson Correlation	-.508**	-.066	-.498**	.390**	1	-.327**	-.242**	.280**	-.240**	-.188*
	Sig. (2tailed)	.000	.408	.000	.000		.000	.002	.000	.002	.017
	N	160	160	160	160	160	160	160	160	160	160
Average Yield on Loans	Pearson Correlation	.270**	.156*	.727**	-.779**	-.327**	1	.369**	-.061	.130	.695**
	Sig. (2tailed)	.001	.048	.000	.000	.000		.000	.446	.103	.000
	N	160	160	160	160	160	160	160	160	160	160
Diversification	Pearson Correlation	.307**	.105	.235**	-.413**	-.242**	.369**	1	.503**	.049	.443**
	Sig. (2tailed)	.000	.188	.003	.000	.002	.000		.000	.538	.000
	N	160	160	160	160	160	160	160	160	160	160
LAD ratio	Pearson Correlation	-.174*	-.031	-.261**	.112	.280**	-.061	.503**	1	-.326**	-.212**
	Sig. (2tailed)	.028	.700	.001	.159	.000	.446	.000		.000	.007
	N	160	160	160	160	160	160	160	160	160	160
Bank Size	Pearson Correlation	.263**	.170*	.514**	-.483**	-.240**	.130	.049	-.326**	1	.142
	Sig. (2tailed)	.001	.031	.000	.000	.002	.103	.538	.000		.074
	N	160	160	160	160	160	160	160	160	160	160
Bank Ownership	Pearson Correlation	.202*	.191*	.583**	-.738**	-.188*	.695**	.443**	-.212**	.142	1
	Sig. (2tailed)	.011	.016	.000	.000	.017	.000	.000	.007	.074	
	N	160	160	160	160	160	160	160	160	160	160

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Source:** From this Research

Table 4 shows the results of the Pearson correlation between the macroeconomic independent variables and bank's profitability measures. It proves that none of the independent variables have significant correlation with the ROA and ROE. The table does show that Inflation Rate displays a negative correlation with both bank's profitability measures, which suggests that the banks in Haiti unanticipated inflation and failed to adjust their interest rate accordingly during the period considered in this study. In addition, Exchange Rate Fluctuation has a negative correlation with ROA and a positive one with ROE. Thus, when the national currency (Gourde/HTG) depreciates against the USD, the Return on Assets (ROA) tends to decrease, that is because their assets listed in Gourde lose value. And the positive correlation implies that investors receive higher return on their investments when the gourde depreciates as the banks make significant return on exchange gains.

**Table 4. Pearson Correlation: Macroeconomic Variables**

		Correlations			
		ROA	ROE	Inflation Rate	Exchange Rate Fluctuations
ROA	Pearson Correlation	1	.998**	-.159	-.005
	Sig. (2-tailed)		.000	.503	.984
	N	20	20	20	20
ROE	Pearson Correlation	.998**	1	-.124	.040
	Sig. (2tailed)	.000		.604	.865
	N	20	20	20	20
Inflation Rate	Pearson Correlation	-.159	-.124	1	-.028
	Sig. (2tailed)	.503	.604		.907
	N	20	20	20	20

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Exchange Rate Fluctuations	Pearson Correlation	-.005	.040	-.028	1
	Sig. (2tailed)	.984	.865	.907	
	N	20	20	20	20

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source:** From this Research

Table 5 shows that all independent variables, efficiency ratio, EA ratio, diversification, NPL ratio and LAD ratio are significantly affect the ROA number. This may give some management guidelines to banks in Haiti how to use their assets more efficient.

**Table 5. ROA Regression Coefficients**

Model		Coefficients <sup>a</sup>							
		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta				Tolerance	VIF
5	(Constant)	-.014	.014			-.958	.340		
	Efficiency Ratio	-.020	.007	-.233		-2.910	.004	.610	1.638
	EA ratio	.425	.102	.662		4.157	.000	.154	6.475
	DIVERSIFICATION	.056	.012	.449		4.734	.000	.434	2.302
	NPL ratio	.068	.019	.581		3.644	.000	.154	6.490
	LAD ratio	-.028	.011	-.227		-2.619	.010	.522	1.915

a. Dependent Variable: ROA

On the other hand, when using the ROE (Table 6) as the dependent variables, it shows that only EA ratio is significantly affect the ROE. That means EA ratio may be the variable when running a bank, management team should pay more attention.

**Table 6. ROE Regression Coefficients**

Model		Coefficients <sup>a</sup>							
		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta				Tolerance	VIF
1	(Constant)	-.866	.337			-2.572	.011		
	EA ratio	11.428	4.021	.221		2.842	.005	1.000	1.000

a. Dependent Variable: ROE

**Source:** From this Research

Table 7 presents the results of the independent T-Test considering the groups of the bank ownership variable: Public bank and Private bank. It shows there are significant differences between those two types of banks in variables such as: ROA, EA Ratio, NPL Ratio, Diversification, LAD Ratio, and Average Yield on Loans Bank size.

**Table 7. Independent Sample T-test**

		Levene's Test for Equality of		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ROA	Equal variances assumed	.023	.880	-2.589	158	.011	-.01241684	.00479680	-.02189096	-.00294271

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	Equal variances not assumed			-3.517	132.735	.001	-.01241684	.00353101	-.01940117	-.00543250
ROE	Equal variances assumed	13.479	.000	-2.446	158	.016	-.94918020	.38807818	-1.71567033	-.18269006
	Equal variances not assumed			-1.409	39.080	.167	-.94918020	.67365095	-2.31167842	.41331803
EA ratio	Equal variances assumed	339.452	.000	-9.019	158	.000	-.05590313	.00619865	-.06814602	-.04366023
	Equal variances not assumed			-5.618	40.765	.000	-.05590313	.00995052	-.07600213	-.03580413
NPL ratio	Equal variances assumed	512.058	.000	13.753	158	.000	.38928457	.02830503	.33337954	.44518961
	Equal variances not assumed			8.084	39.481	.000	.38928457	.04815321	.29192342	.48664573
Efficiency Ratio	Equal variances assumed	5.948	.016	2.403	158	.017	.13476250	.05607645	.02400634	.24551865
	Equal variances not assumed			1.974	51.006	.054	.13476250	.06828182	-.00231858	.27184358
Average Yield on Loans	Equal variances assumed	3.712	.056	-12.166	158	.000	-.05482674	.00450647	-.06372744	-.04592604
	Equal variances not assumed			-11.295	59.518	.000	-.05482674	.00485411	-.06453802	-.04511546
Diversification	Equal variances assumed	20.237	.000	-6.206	158	.000	-.21771567	.03508391	-.28700961	-.14842172
	Equal variances not assumed			-8.133	121.636	.000	-.21771567	.02676978	-.27071071	-.16472063
LAD ratio	Equal variances assumed	20.056	.000	2.730	158	.007	.10429139	.03820582	.02883139	.17975140
	Equal variances not assumed			4.365	153.130	.000	.10429139	.02389442	.05708613	.15149666

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Bank Size	Equal variances assumed	23.884	.000	-1.799	158	.074	-.41045248	.22810953	-.86098980	.04008484
	Equal variances not assumed			-1.592	55.732	.117	-.41045248	.25780745	-.92695768	.10605272

**Source:** From this Research

### 5. CONCLUSIONS

Throughout our analysis, we have found out the factors influencing banks profitability in Haiti while getting a lot of insights about the public and private banks. Using bank-specific and macroeconomic variables, we were able to discover the variables that correlate with, and influence banks profitability in Haiti. In addition, through those variables, we have noticed the differences between public and private banks.

Among the variables that show a significant positive influence on bank profitability in Haiti, the Equity to total assets ratio is the strongest. The EA ratio, which represents capital adequacy in this study, has a significant positive influence on the profitability measures of the Haitian banking system overall and demonstrates the same effect on public and private banks separately. The regression analysis proves that for every 100-basis point increase in EA ratio, the Return on Assets (ROA) will go up by 66.2 basis points. And, for every 100-basis point increase in the EA ratio, the Return on Equity (ROE) will increase by 22.1 basis points. Those results show how important a higher capitalization is, for the Haitian banking system. In Haiti, banks with greater EA ratio clearly make higher return on assets and equity since the concern ratio acts as a buffer against financial losses, allows banks to take advantage of investments opportunities, and increases bank's creditworthiness. In addition, it is safe to imply that one of the reasons public banks record less profits than private banks is because the latter have higher EA ratio than the former. In fact, we are 95 % confident that the mean EA ratio of public bank is at least 4% and at most 8% lower than the mean EA ratio of private bank.

Another significant variable that impacts banks profitability in Haiti is Diversification. As a reminder, in this paper, that variable is defined as other income to total income. The relationship between diversification and banks profitability measures proves that diversification contributes significantly to the profitability of the banks in Haiti. In fact, for every 100-basis point increase in Diversification, the Return on Assets (ROA) of the banking system will go up by 44.9 basis points. However, by running separate regression for public and private banks, we noticed that diversification does not influence public banks' profitability measures at all while impacting significantly and positively private banks profitability. This implies that the significant positive relationship between diversification and the profitability of the banking system is attributable to the private banks. In other words, the latter are the one that make so much income on diversification (commissions, exchange gains and fees) to the point that this income can significantly influence their profitability. In fact, we are 95 % confident that the mean diversification of public bank is at least 16 % and at most 27 % lower than the mean diversification of private bank.

The efficiency ratio is the strongest variable among the one that show a negative influence on bank profitability in Haiti. The efficiency ratio, which represents management efficiency in this study, has a significant negative influence on the profitability measures of the Haitian banking system overall and shows the same effect on public and private banks separately. This relationship demonstrates that the efficiency ratio significantly affects the profitability of the banks in Haiti. In fact, for every 100-basis point increase in the efficiency ratio, the Return on Assets (ROA) of the banking system will drop by 23.3 basis points. This is because an increase in the efficiency ratio means that the operational expenses go up in relationship to the net banking income. The banks would be significantly more profitable if they could decrease their efficiency ratio. Besides, this study does not have strong enough evidence to suggest that the mean efficiency ratio of the public banks is significantly different from that of the private banks.

The NPL ratio is another significant variable that affects the banks profitability in Haiti. This variable has a significant negative correlation with the measures of banks profitability. However, we found a misleading positive sign when running regression. This might be explained by the significant difference in the mean NPL ratio of public and private banks. In fact, we are 95 % confident that the mean NPL ratio of public bank is at least 29% and at most 49% higher than the mean NPL ratio of private bank. This implies that the public banks issue loans to riskier borrowers. In contrast, there is not even a significant negative correlation between private bank's NPL ratio and their profitability measures.

The LAD ratio is also a variable that has a significant influence on the profitability of the Haitian banking system. This variable indicates the ability of banks to repay customers' deposits with their most liquid assets. In this paper, it is used as a measure of liquidity. It turns out that the level of LAD of the Haitian banking system negatively impacts the Return on Assets (ROA). In fact, for every 100-basis point increase in the LAD ratio, the Return on Assets will decrease by 22.7 basis points. The level of LAD ratio



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and the relationship between this variable and banks profitability suggests the banks should engage more in financial intermediation and invest in more financial instrument to generate more interest income. Although the public banks record higher LAD ratio compared to the private one. In fact, we are 95 % confident that the mean LAD ratio of public bank is at least 6 % and at most 15 % greater than the mean LAD ratio of private bank.

Contrary to our expectations, the average yield on loans does not have a significant influence on the Haitian banking system. Even when running separate regression for public and private banks, average yield on loans still has no impact on banks profitability. However, this independent variable has a significant positive correlation with the public banks' ROA. The absence of influence can be caused by two reasons: either the interest on the loans is not high enough to generate significant returns, or the banks do not issue a considerable amount of loans, thus the interest income is not significant enough to impact their profitability. Knowing that over the past five years, the average interest on loans is 17 %, we would argue the latter reason is more plausible. This is yet another proof that the banks in Haiti do not fulfill their primary responsibility, which is financial intermediation. Although, we need to mention that since they operate in an unstable country, they need to be more careful when it comes to managing their credit risk. Besides, it is the government's responsibility to create an appropriate environment where the banks can feel safe to lend money to their clients.

As expected, bank size shows a significant positive correlation with banks profitability. This means that, in the Haitian banking system, banks with higher size tend to generate higher profits due to economies of scale and scope. However, when running separate correlations for private and public banks, we noticed some differences. For private banks, there is no significant positive correlation between size and banks profitability measures. The positive relation between these two variables is significant for public banks. The reason for that might be private banks, which have higher size than the public one, already reach to a size that they can no longer reap significant benefit from economies of scales and scope. Besides, this study does not have strong enough evidence to suggest that the mean size of the public banks is significantly different from that of the private banks.

Like bank size, Bank ownership shows a significant positive correlation with banks profitability measures in Haiti. It means that the private banks record higher profitability than their counterparts. This is consistent with the significant differences proved between the private and public banks through the independent variables such as EA ratio, NPL ratio, Efficiency ratio, Diversification and LAD ratio. The variables that positively impact banks profitability measures are significantly higher for the private banks and the one that negatively influence banks profitability measures are significantly lower for the private banks compared to their counterparts.

Finally, this study reveals that the macroeconomic variables considered do not have any significant correlation with banks profitability measures. Therefore, the banks should focus on the bank-specific variables to improve their performance. Although, they should not ignore the macroeconomic variables since they impact their transactions, and the economic behavior of their stakeholders.

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