



Determinants of and Differences in Domestic and Foreign Bank Profitability



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INTRODUCTION

This research examines the determinants and the differences between the profitability of 10 of the top banks in the United States and the top publically traded commercial banks in 7 of the world's largest economies.

- The bank selection process was determined by data availability.
- Timeframe is from the past decade, 2004-2014.
- Bank specific variables and macroeconomic variables
- Data was retrieved from COMSTAT, The World Bank Group Database, and annual reports from selected banks.

This empirical research was influenced by a number of published empirical research analyses. Gungor (2007) employs a model that illustrates the significance on various variable factors, such as asset size, asset quality, capital adequacy, GDP and interest rate.

Two studies by Haslem (1968 and 1969) provide a 2 year statistical analysis with balance sheet and income statement ratios from all member banks of the Federal Reserve. With emphasis on capital adequacy and natural logarithm of total assets, and GDP.

DOMESTIC BANKS

	BAC	C	HOMB	JPM	KEY	PNC	STI	TCB	TD	WFC
Intercept	3.98**	8.00	-0.27*	-0.27	4.97	0.75	-10.16	4.63	0.49	0.30
	(3.77)	(0.74)	-(2.60)	-(0.35)	(0.67)	(0.49)	-(0.79)	(2.09)	(1.88)	(0.33)
Asset Size	-0.65**	-1.30	0.09**	0.05	-1.13	-0.08	1.88	-1.24*	-0.03	-0.05
	-(3.84)	-(0.77)	(3.28)	(0.46)	-(0.76)	-(0.29)	(0.78)	-(2.45)	-(0.68)	-(0.39)
Cash Adequacy	0.64	-17.51	3.14	0.18	5.82*	0.42	-2.50	-2.93	0.89	1.83
	(0.44)	-(0.56)	(2.29)	(0.14)	(2.82)	(0.08)	-(0.57)	-(0.58)	(1.36)	(0.50)
Capital Adequacy	0.52	1.77	0.41	0.66	4.81	-0.89	2.98	8.16	-1.41*	1.26
	(0.37)	(0.33)	(1.62)	(0.47)	(2.32)	-(1.08)	(0.66)	(1.10)	-(3.04)	(0.85)
P/E Ratio	0.00	0.01	0**	0**	0.01**	-0.01*	0.00	0.01	-0.01***	0.00
	-(0.20)	(0.77)	-(4.15)	-(3.22)	(3.76)	-(2.36)	(0.32)	(1.89)	-(8.55)	-(0.47)
GDP Growth	0.01	0.10	-0.01	-0.01	-0.02	0.00	0.02	0.00	0.02***	0.01
	(0.85)	(1.23)	-(2.01)	-(0.48)	-(0.64)	(0.15)	(0.46)	-(0.21)	(7.02)	(0.33)
Interest Rate	0.01	0.02	0.00	0.01	0.04	0.01	0.02	0.05*	0.01*	0.00
	(1.61)	(0.22)	-(0.68)	(2.08)	(1.83)	(0.72)	(0.58)	(2.43)	(2.83)	(0.47)
# of Observations	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Adj. R-square	0.89	0.63	0.86	0.89	0.88	0.67	-0.76	0.80	0.97	0.77

*** For P-value significance at 1%, ** at 5%, and * at 10%

T-statistics are provided in parentheses underneath the coefficients

Results:

- BAC has 1 significant variable, with both the intercept and the logA determinant having less than 5% level of significance.
- HOMB has 3 significant variables, with logA and P/E ratio at less than 5% level, and the intercept at 10% level.
- JPM has 1 significant variable, with the P/E ratio at a 5% level.
- KEY has 2 significant variables, with P/E ratio at 5% and CASH at 10%.
- PNC has 1 significant variable, with P/E ratio at 10% level.
- TCB has 2 significant variables with both logA and IR at the 10% level.
- TD has 4 significant variables with both P/E and GDP growth at less than 1% level, and CA and IR at the 10% level.
- C, STI, and WFC did not show any significance with the selected variables.
- The most significant variable relating to the ROE was the P/E ratio, with a total of 5 banks that showed significance. logA also had a large impact with a total of 3 banks showing a significance with its ROE.
- Highest adjusted R^2 that shows the fit of the model are BAC, JPM both at 89%, and KEY at 88%.

EMPIRICAL FRAMEWORK

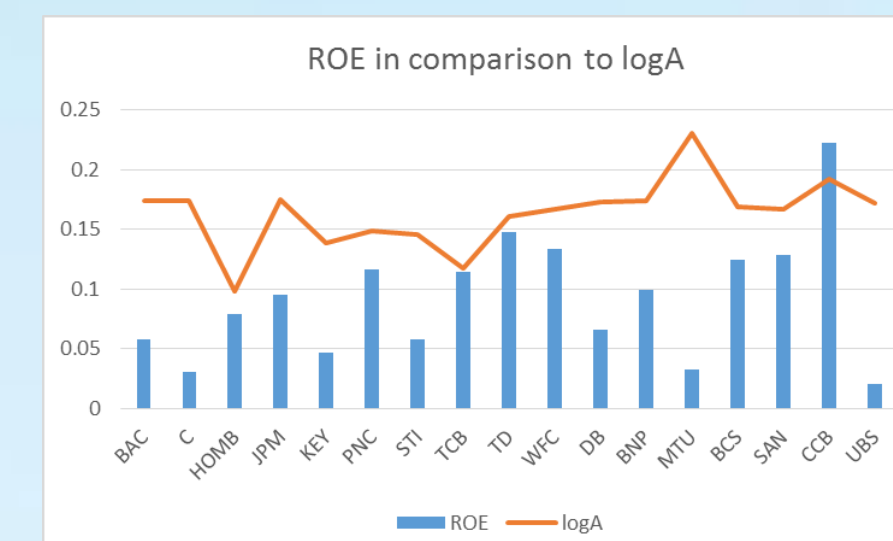
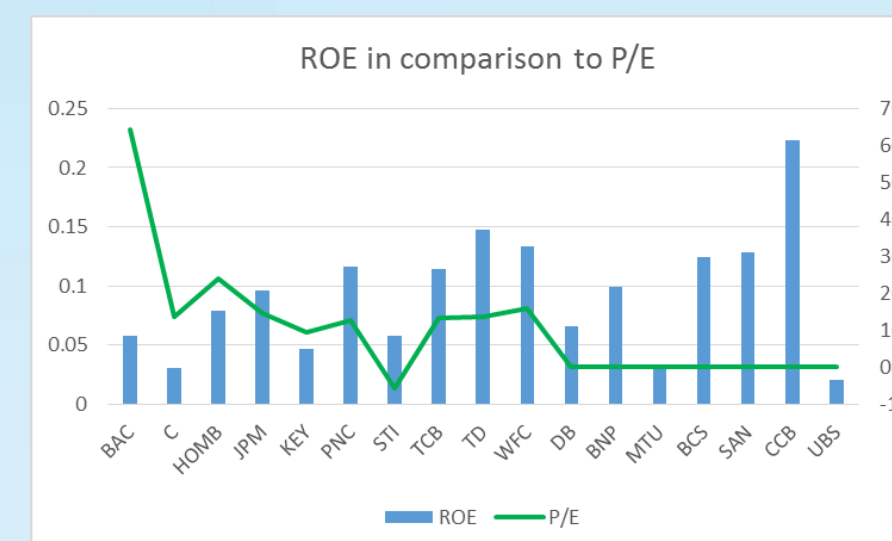
The sample of this study includes a total of 187 observations. Domestic banks have a total of 110 observations, and foreign banks have 77 observations.

Equation of regression:

$$ROE = \alpha + \beta_1 (\log A) + \beta_2 (\text{CASH}) + \beta_3 (\text{CA}) + \beta_4 (\text{P/E}) + \beta_5 (\text{GDP growth}) + \beta_6 (\text{IR}) + \epsilon$$

The Dependent variable is the bank-year ROE. α is the intercept. For the explanatory variables, we have 6 different independent variables including asset assize (logA), cash adequacy (CASH), capital adequacy (CA), P/E ratio (P/E), GDP growth rate and Interest Rate (IR). β s are regression coefficients and ϵ is the residual.

The graphs below are individual bank comparisons of two most significant independent variables found from the regression analyses.



FOREIGN BANKS

	DB	BNP	MTU	BCS	SAN	CCB	UBS
Intercept	2.22	0.74	0.55	2.73*	0.39	0.26	69.77
	(0.49)	(0.89)	(0.10)	(2.57)	(0.31)	(0.98)	(1.05)
Asset Size	-0.32	-0.12	-0.06	-0.38	-0.02	0.04	-10.76
	-(0.49)	-(0.97)	-(0.09)	-(0.07)	-(0.76)	(1.11)	-(1.06)
Cash Adequacy	-50.37	-2.25	-0.16	-0.70	-1.39	0.36	7.00
	-(1.33)	-(2.09)	-(0.02)	-(2.26)	(2.82)	(1.45)	(0.37)
Capital Adequacy	6.60	4.73	-1.00	-8.29	-1.53	-5.12*	-84.81
	(0.44)	(1.83)	-(0.15)	-(1.13)	(2.32)	-(5.86)	-(0.84)
P/E Ratio	2.84	-0.34	5.10	-0.05	-1.46**	360.07*	-57.74
	(1.09)	-(1.10)	(0.13)	-(0.06)	(3.76)	(2.49)	-(0.83)
GDP Growth	0.01	0.00	0.03	-0.01	0.00	-0.01	0.09
	(0.50)	(0.29)	(2.10)	-(1.17)	-(0.64)	-(1.74)	(0.70)
Interest Rate	-0.03	0.02	-0.01	-0.01	-0.01	0.00	-0.46
	-(0.38)	(0.99)	-(0.96)	-(1.21)	(1.83)	-(1.84)	-(0.72)
# of Observations	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Adj. R-square	-0.20	0.85	0.24	0.83	0.87	0.86	-0.31

*** For P-value significance at 1%, ** at 5%, and * at 10%

T-statistics are provided in parentheses underneath the coefficients

Results:

- BCS has 1 significant variable, with the intercept at the 10% level of significance.
- SAN has 1 significant variable, with the P/E ratio at the 5% level.
- CCB has 2 significance variables, with the CA and P/E ratio at a 10% level.
- DB, BNP, MTU, and UBS all did not show any significance.
- High adjusted R^2s for BNP, BCS, SAN, and CCB.

CONCLUSION

- P/E ratio was the variable that showed the most significance with a total of 7 banks out of the 17 chosen domestically and foreign. This shows that profitability have the strongest relationship with its price over earnings.
- Asset size was found to be negatively and significantly related to ROE in 3 of the domestic banks.
- Domestic banks showed a stronger relationship and a better fit for the regression analysis compared to the foreign banks.
- With all 187 observations pooled, the most significant variable was the GDP growth at less than 1%. Showing the overall relationship between bank profitability and its GDP growth are positively related.
- Drawbacks include the limited amount of time during the data collection process. A larger sample of banks would've shown a more detailed result.

POOLED SAMPLE

Regression Statistics	
Multiple R	0.41498564
R Square	0.17221308
Adjusted R Square	0.14462018
Standard Error	0.10175486
Observations	187

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.14**	0.07	2.11	0.04
logA	-0.01	0.01	-1.32	0.19
CASH	0.09	0.26	0.35	0.73
CA	-0.30	0.30	-1.00	0.32
P/E	0.00	0.00	-0.08	0.93
GDP Growth	0.02***	0.00	5.04	0.00
Real Interest rate	0.00	0.00	0.52	0.60

Results:

- All 187 observation pooled together as a cross sectional sample.
- GDP Growth is highly significant with the regression at less than 1% level.
- The intercept shows a significance of 5% level.
- Adjusted R-square is very low, showing a weak fit of the overall model.