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Determinants and Differences of Domestic and Foreign Commercial Bank Profitability

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DETERMINANTS AND DIFFERENCES OF DOMESTIC AND FOREIGN COMMERCIAL BANK PROFITABILITY

Bank Specific and Macroeconomic Determinants of Large Bank Profitability in the United States and Seven Foreign Countries (2004-2014)

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I. INTRODUCTION

Commercial banks are financial institutions that provides services in transferring funds from saving units to investing services. They earn a profit by providing loans with the money they receive from deposits. There are a various number of products offered by banks to both the general individual as well as businesses. Being one of the most important factors in financial intermediation, commercial banks are a crucial part of the growth of the economy all over the world.

Domestic commercial banks in the United States are subject to various number of laws and regulations. Those regulations don't necessarily apply to foreign banks, and foreign banks are usually considered to be more lenient when it comes to government regulation in the financial industry. Generally, banks pay their deposit customers an amount of interest that will be counted as part of their expenditures. In return, they will get to use that deposited money to make investments and make a return. The difference between interests made from their investments with the interests paid from their deposit is called the spread, which assists in the process of determining the banks' profitability.

U.S. banking institutions are all chartered, supervised, and regulated at both the state and federal levels. All publically traded commercial banks in the U.S are mandated to submit periodic reports to the US Securities and Exchange Commission (SEC). Reports must include statistical summaries and other narrative accounts such as the Management Discussion and Analysis (MD&A) along with company goals and objectives in order to ensure all investors are protected, all committed actions are fair and orderly maintained with efficient markets, and to assist in facilitating capital formation for the country. All customer accounts and deposits in commercial banks in the United States are also mandated to be insured in the US Federal Deposit Insurance Corporation (FDIC).

Foreign Commercial banks have different sets of standards varying by country and region. It is commonly known that foreign standards are less restrictive, especially in areas of securities, insurance, and real estate related products compared to the United States. Common issues faced by many international investors or businesses such as commercial banks are cross border

supervision, regulations or international agreements, foreign exchange policies and risks, or even differences in macroeconomic factors with the central banking systems.

An efficient financial system and expanding economic conditions lead to positive outlooks on profitability. Even with the amount of differences within the various regions, all commercial banks concentrate on increasing their profitability through encouragement of a greater volume of demand and an increase in the flow of funds in the economy. In this paper, the analysis of commercial bank profitability will be concentrated on year 2004-2014. During the last few years in this ten-year period, the Great Recession had a huge adverse impact on the entire economy. Both the domestic and international banking industry are dramatically affected. Banks and other financial institutions engaged in reckless mortgage underwriting, leading to the housing bubble of 2008. The housing crisis led to a financial crisis, which led to the bankruptcy of Lehman Brothers and significant underperformance of many other financial institutions. While the recession will have an effect on the volatility of this empirical research, it will be interesting to see the changes with recovery over the more recent years, namely the post-crisis period.

This paper will examine the determinants and the differences between 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 empirical study time window will be concentrating on the past decade, from 2004-2014. The analysis focuses on a list of bank specific variables along with macroeconomic variables that jointly determine the dependent variable: profitability. The remaining of the paper consists a literature review in regarding the determinants and differences of banking profitability for both domestic and foreign regions in Section 2. A review of the chosen variables and methodology and a brief background of the companies chosen for this research is explained in Section 3. Section 4 contains the empirical research and findings, and a conclusion is provided in Section 5.

II. LITERATURE BACKGROUND

Profitability determinants for commercial banks can be split into factors that are both internal and external. Internal profitability determinants are factors that are influences features of the specific company, therefore often relates to bank management, revenue and expense control as

well as the firm's potential for growth through leverage and investment objectives. The external determinants are factors towards the overall economy such as GDP Growth as well as factors with the firm's competitors and the legal environment. Different types of variables use different aspects of profit determination. Bank specific financial ratios such as asset size, asset quality, capital adequacy, cost efficiency, and liquidity are common analyses. Macroeconomic factors such as the real GDP Growth rate, inflation, market interest rates and ownership are also often significant Gungor (2007).

A number of empirical research analyses have to be performed in order to determine banking profitability. All variables from this research are chosen from widely accepted previous scholarly studies. Haslem (1968, 1969) has a 2-year statistical analysis research that shows the balance sheet and income statement ratios for all the member banks of the Federal Reserve System in the United States. The study concludes with a number of ratios with a significant relation to profitability. Many ratios relate to particular capital proportions, or factors that relates to interest paid and received. While the real GDP Growth did not successfully show a great variability with the banking sector profits, they did not state that GDP Growth did not affect profits overall. The research may still have the potential to be statistically significant. This paper incorporates similar variables to Haslem's study with the real GDP Growth rate as a measure of the size of the market. The banks are operating under overall growth of factors such as supply and demand of the specific countries. Capital adequacy and natural logarithm of total assets are also in this paper under bank specific variables. The log of assets is similar to the reduction of the scale effect such as the control of cost differences in relation to bank size, while capital adequacy shows the general stability of the financial institutions.

Ali (2005) studies domestic banks' and foreign banks' determinants and differences for London. The analysis compares the profitability of domestic and foreign banks operations in the Lebanese Market from 1993-2003. The paper concludes that foreign banks are more profitable than domestic banks regardless of their ownership structure. Even though they operate in the same market, the domestic and foreign banks' profitability determinants are found to be different. The difference between domestic and foreign banks leads to the finding that foreign banks affects less strongly by the macroeconomic factors than domestic banks. This paper adopts a similar empirical framework based on the determinants and differences between domestic and foreign

financial institutions. The same macroeconomic variables are chosen as well as the number of other bank specific variables in order to retrieve a diversification of result of profitability determinants.

Another research is conducted comparing Pakistan with foreign entry banks by Azam and Siddiqui (2004). They conclude that locally controlled commercial bank in Pakistan is more profitable than the foreign controlled. With regard to the volume of the profit reflecting on the earnings per share, however, Pakistan's locally controlled banks are more capital efficient. Net interest margin shows a positive significant association with ROE for the foreign sector. The capitalization level has a negative effective with ROE along with the finding of no significance with the GDP Growth. ROE is the dependent variable of the empire framework with numerous bank specific characteristics as independent variables throughout Azam and Siddiqui's research. This paper incorporates ROE as the dependent variable similarity to my study in order to explain the efficiency of the bank's investments and resources under their profit generation. The framework also includes similar independent variables such as Capital adequacy and GDP Growth which are heavily emphasized in this paper.

In the research for the profitability of emerging markets by Olson and Zoubi (1994), costs, sizes, and macroeconomic factors are analyzed. Summarizing the results from the number of studies, the authors find profits negatively correlates with cost measures. The greater the bank size, the greater the dependence they have on loans in return for revenue. A larger GDP Growth increase tend to positively correlate with profitability, and the larger proportion of equity to asset also shows a positive relationship with bank profits. Size and GDP Growth are directly relating to many of the analysis on both domestic and international banks in this study.

The relationship between the return on equity (ROE) and capital asset ratio is examined by Berger (1995). They concentrate on a sample of US banks between the years 1983-1992 where there are a number of potential explanations of positive capital earnings relationship. An evaluation of capital adequacy shows an increase in capital may raise expected earnings from the reduction of expected cost and distress. Berger (1995) directly relates its capital ratio to its study as this paper is testing out the capital to assets ratio and its effects on higher profitability. Athanasoglou, Delis and Stakouras (2006) analyzed a number of banks in the South Eastern European region over the 1998-2002 period. Banks profits are not significantly relatable with

real GDP per capita growth fluctuations. They also include explorations of difference associations and other potential impacts of capital on bank profitability through various banking positions and standings. Higher levels of capital show more capability toward risk. The internal and external factors on impacts of bank performance directly relates to the framework of this paper.

In the research of profitability of Korean banks, researchers reach the conclusion that the P/E ratio has a U-shape relation with ROE. Higher forward P/E ratios lead to lower ROE with a more volatile and widened spread than firms with lower P/E ratios. Companies with a disappointing profitability in the current year tend to have high forward P/E ratio in the previous year (Wu 2014). The P/E ratio can estimate cost of equity capital and excess stock return earnings. The analysis shows firms with higher forward P/E ratios achieve lower ROE and higher volatility in subsequent years. P/E ratio is one of the independent variables under this empirical research in order to analyze investment expectations as well as future growth expectations in relation to firm risk.

Hoggarth, Milne, and Wood (1998) provided a review concentrating on UK and Germany's financial stability. In that analysis, the authors conclude that the behavior of real GDP Growth fails to explain the greater variability of banking sector profits. They conclude to mention that GDP Growth variability did not actually affect profits whether it impacts the UK and German banks' performances overall. The signs should be positive since higher GDP Growth is in relation with a lower probability of individual and corporate default as well as an easier access to credit overall. Hoggarth , Milne, and Wood (1998) also mention high viable inflation and relationship with major bank earnings as well as other loan decision. Their research on GDP Growth and profits on United Kingdom and Germany's economy and banks is highly relatable to this papers banking system efficiencies.

Claessens, S. Demirguc, K & Harry, H. (2001) conclude with a main finding of foreign banks tend to have higher interest margins, profitability, and tax payments than domestic banks, especially in those that are developing countries. There is no significance of net interest margin or loan loss provision with a foreign entry, and can interpret the results as foreign bank entry creates a greater efficiency in the domestic banking sector. This highly relates significantly the

foundation of this paper, with an analysis of the bank's efficiency with its capital and other related variables.

Staikouras and Wood (2004) compose a cross section time series analysis examining European banks from 1994-1998. The results are that the profitability of European banks' influences are not only by factors related to their management decisions but also by factors related to changes in the external macroeconomic environment. Structure-performance relationship in European banking finds a positive effect of the concentration or market share variables on bank profitability. The level of interest rates has a positive effect with the variability of interest rates and the GDP Growth rates to be negative. Effects of GDP Growth on bank profits are highly related to this study.

In general, the literature collectively suggests that a linear multivariate model utilizing both internal and external factors should reveal some determinants of the profitability of the banking industry. This relation, however, is variant depending on regions, degree and pattern of regulations, and bank-specific economic environment. This analysis will include various variables in relation with the ROE. Both bank specific and macroeconomic variables will be analyzed with a variety of incorporation of different sectors within a firm's financial statements. By adopting a diverse framework with variables including assessing the company's assets, capital, cash, and earnings, as well as the economy's GDP Growth rate and interest rate allows us to compare and contrast the impacts and determinants of the bank's profitability. My study makes contribution to the literature by illustrating the various factors of determinants of banking profitability through a number of bank individual and macroeconomic variables.

III. DETERMINANTS OF BANK PROFITABILITY AND OVERVIEW OF BANKS

Profit is an accounting concept showing a greater amount of income over expenditures during a specific time period. Profit is the foundation and the ultimate most important part for a business. Without profit, there will be no existence of the business. In this specific research, we will be concentrating on the profit of commercial banks.

Commercial banks receive their revenues from fees on their services and interest it earns from its assets. As long as revenue is greater than their expenses, they will have a positive profit. Profitability gives a good idea of a businesses' ability to raise its income. The three main measures of profitability are Return on Assets (ROA), Return on Equity (ROE), and Return on Investments (ROI). One downfall of the profitability measurements is that it is mainly based on accounting figures, so factors such as time value of money and investment risk by shareholders are not considered.

In order to go more in depth with the research, we will be concentrating on the ROE ratio for the data analysis section. ROE is the best accounting ratio for measuring shareholder performance of an organization. It can be broken down into very specific parts known as the DuPont analysis. The simple DuPont method can be broken down into three sections, the Net Profit margin, Asset turnover, and Total Leverage. Through those calculations, analysts are able to determine whether the company is utilizing its assets efficiently, or if it should be increasing its financial leverage for further growth.

While ROE is the best and most common measure of profitability, it does not consider factors such as timing of cash flows or turnovers. Companies can legally manipulate their earnings, skewing the analysis within the ROE ratios. The specific ratios selected as the independent variables in relation with the ROE are all common factors of profitability determinants.

III.1 REVIEW OF DETERMINANT VARIABLES

Dependent variable:

Return on Equity- (ROE) – net profit divided by shareholders' equity. It measures the bank's profitability by calculating how much profit is generated with the money invested by shareholders.

Firm Specific Independent Variables:

Asset size – (logA): Natural Logarithm of Total Asset. Total assets of commercial banks are typically used as a proxy for the company's size. The effect is usually positive. However,

regarding the slope coefficient on asset size in relation to positive non-performing loan ratios, leading to the conclusion that the greater the asset size, the greater the risk-taking incentives are, and the larger problem assets pose to the organizations (Lee 2008).

Cash adequacy – (CASH): total cash (or cash plus short-term investments) divided by total assets. This variable measures the bank's most liquid asset proportion, and its preparedness to cope with financial risks, at least in the short run. It is the primary measure of cash sufficiency. It is estimated to have a positive relationship with bank profitability. However, holding a large amount of cash can have an opportunity cost effect in relation to investment and growth (Bourke 1989).

Capital adequacy – (CA): total capital equity divided by total assets. This variable measures the safety and soundness of the bank. A bank with high level of capital is assumed to handle any financial risks which come by with ease as compared to one with low levels of capital. Capital adequacy usually has a positive impact on bank profitability. In a study conducted on Nigerian banks, researchers showed the capital adequacy had a positive relationship with the profitability of banks in Nigeria. Capital adequacy is an important factor on the determination of profit ability through deposit. It has the potential to provide hedge against losses when current earnings are not enough (Olalekan 2013).

P/E Ratio – Price to Earnings ratio. It can reveal the company's real stock market values as well as the valuation compares to their industry group or a benchmark. The ratio is often compared with its expected future rate of growth in earnings and dividends. It is estimated to have a positive relationship with the profitability.

Macroeconomic Independent Variables:

Economic Growth Rate % – (GDP Growth) – Annual Real gross domestic product (GDP) growth rate in percentages. It measures the economy's overall activity, and this measure is after adjustment to inflation. It is one of the main indicators of a country's economy and it represents the total value goods and services produced domestically. The production measure also includes consumption, government purchases, private inventories, paid in construction costs and foreign trade balances with the negative towards imports and positive towards exports.

This variable has an impact the supply and demand of bank's loans and deposits therefore it has an impact on profitability. Optimistic conditions in the economy will impact the level of financial transactions positively. Inversely, as the real GDP Growth slows down and deteriorates, defaults increase, reducing returns and reducing investments.

Interest Rate – (IR) – Real Interest Rate. Interest rate refers to the percentage charged by a lender such as a bank to a borrower for the use and purchase of assets. Real interest refers to interest that has been adjusted to inflation, showing the real cost to the borrower, and the real yield to the lender. It is the growth rate of purchasing power. The power of the given level of capital is constant over time with the adjustment of inflation. The real interest rate is calculated by the nominal interest rate subtracting inflation.

Increase in interest rate tend to lead to a profit increase. It directly increases the yield on cash holdings and the proceeds go straight to the bank's earnings. Since banks' main expenditure is the set interest they pay out to their customers, an increase in interest rate will lead to the profitability of loans to increase as well, leading to a larger spread between the federal fund's rate and the banks' rate. Interest rate is also likely to increase during a strong economy, exhibiting a positive but not causal relationship with profitability.

III.2 OVERVIEW OF DOMESTIC AND FOREIGN BANKS

For the analysis on the domestic United States, 10 of the largest public traded commercial banks in America are chosen for this research. Wells Fargo & Company (WFC) started in 1852 with a current market capitalization of $283.27B and a 27.47 for its current year profit margin. For a simple comparison, a company's market capitalization shows its total market value, its shares outstanding multiplied by its current price. Profit margin shows an overview of the company's profitability with the determination of the company's net income to sales, the larger the number, the more efficient the company is generating its profit. JP Morgan Chase (JPM) was founded in 1799 with a current market cap of $241.19B and a profit margin of 26.89%. Bank of America Corp (BAC) started in 1874 with a current market cap of 180.18B and a profit margin of 20.25%. Citigroup Inc. (C) was found in 1812 with a $162.04B market cap and a 20.74% profit margin.

The Toronto-Dominion Bank (TD Bank TD) was founded in 1855 and started in America in 1973, it has a market cap of $77.76B and a profit margin of 16.71%. The PNC Financial Services Group Inc. (PNC) was founded in 1922 with a current market cap of $47.39B and a 27.40% profit margin. SunTrust Banks Inc. (STI) was founded in 1891 with a $21.86B market cap and 23.83% profit margin. KeyCorp (KEY) was founded in 1849 with a current market cap of $11.61B and a 23.18% profit margin, Home Bancshares Inc. (HOMB) was founded in 1998 with a $3.15B market cap and 34.93% profit margin. The TCF Financial Corporation (TCB), which was founded in 1923 has a market cap of $2.68B and a 14.49% profit margin.

For the analysis on banks from the foreign region, with a limitation of certain data accessibility, the largest banks from 7 different countries are chosen for the international bank analysis regardless of the country of China. Industrial and Commercial Bank of China (ICBC) is the largest bank for that country, however, due to data intake restraints, The China Construction Bank (CBC), will be analyzed. The banks chosen are all publically traded commercial banks in 7 of the world's most developed economies. Deutsche Bank (DB) was founded in 1870 with its headquarters in Frankfurt am Main, Germany. It has a market cap of $24.18B USD and a current profit margin of -20.86% as of December 31st of 2015. All profit margin percentages will be given as of the fiscal year of 2015. Their data was obtained through their annual reports published on their website. All numbers for the empirical research are in Euro (EUR). BNP Paribas (BNP) was founded in 1848 and is based in Paris, France. It currently has a $60.71B USD market cap and a profit margin of 16.68%. All numbers analyzed for the empirical research will be in EUR. Mitsubishi UFJ Financial Group (MTU) was founded in 1880 and is based in Tokyo, Japan. It has a $63.84B USD market cap and a 29.32% profit margin. All financial data is reported in Japanese Yen (JPY). Barclays PLC (BCS) was founded in 1896 with its headquarters in London, United Kingdom. It has a $46.96B USD market cap and a 2.93% profit margin. All data is reported under British Pound (GBP). Banco Santander (SAN) was founded in 1857 with its headquarters in Boadilla del Monte, Spain. It has a market cap of $63.62B USD and a profit margin at 16.74%. All data obtained for the empirical research was under the EUR. China Construction Bank (601939) was founded in 1954 with its headquarters in Beijing, China. It has a current market cap of $157.3B and a profit margin at 46.06%. All financial data received from their website was under the Chinese Yuan (RMB). Union Bank of Switzerland (UBS) was founded in 1862 and is headquartered in Zurich, Switzerland. It has a market cap of $60.92B

USD and a profit margin of 20.27%. All data obtained for the empirical research was under the Switzerland Swiss Franc (CHF). All financial data was obtained through each company's website under their published annual reports or SEC filings. This paper's analyses are more in depth with an array of variables constructed from raw financial data in order to further determine each bank's profitability and its value as well as its growth potential.

IV. EMPIRICAL FRAMEWORK AND FINDINGS

The sample of this study include datasets from 10 large publicly traded commercial banks from the United States and 7 large publicly traded foreign commercial banks from 7 different countries from the years 2004-2014. The bank specific variables for the domestic banks from United States are pulled from COMPSTAT. The bank specific variables from all foreign banks are retrieved from the company's annual reports. All macroeconomic variables are pulled from The World Bank Group.

The Statistical analysis will be presented in three different sections. Section A will be on domestic banks, with a total of 110 observations of data. Section B will be foreign banks, with a total of 77 observations of data. Section C will be the 2 databases combined with a collaboration analysis of a total of 187 observations.

Equation of regression:

$$ROE = \alpha + \beta_1 (logA) + \beta_2 (CASH) + \beta_3 (CA) + \beta_4 (P/E) + \beta_5 (GDP\ Growth) + \beta_6 (IR) + \varepsilon$$

The above equation is the main equation of regression. The Y variable is the bank-year ROE, the dependent variable. Alpha 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 and Inflation Rate (IR). Betas are the regression coefficients. ε is the residual.

IV.1 DESCRIPTIVE STATISTICS:

Table 1 Panel A:

U.S. Banks - Descriptive Statistics

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
Mean	0.09309	5.37250	0.02559	0.08931	17.21459	2.28182	2.54545
Median	0.09918	5.52173	0.02391	0.09010	13.51952	2.40000	2.00000
Standard Deviation	0.08812	0.91145	0.01379	0.02199	56.01790	1.01441	1.28174
Minimum	-0.39010	2.90590	0.00303	0.03661	-163.94444	-0.30000	1.20000
Maximum	0.26606	6.41046	0.07322	0.15483	556.00000	3.80000	5.20000
Count	110	110	110	110	110	110	110

The descriptive statistics of the variables are presented under Panel A of Table 1. The table shows the mean, median, standard deviation, minimum, and maximum of the variables. On average, the 10 domestic commercial banks have an ROE of 9.31%, showing a healthy average profitability within the banking industry. The mean of the independent variables can vary on the specific banks itself as well as the economic standing of the different time periods. The standard deviation of ROE is 8.81%, showing a pretty large spread between the numbers with a minimum of -39.01% and a maximum of 26.61%. The medium is at 9.92%.

The mean of Asset size (logA) is 5.37, and the mean of the cash adequacy ratio is 2.2%, showing that 2.2 cents for every dollar the average bank puts into its assets is kept on cash. The Capital adequacy (CA) is 8.93%. This shows that on average, 8.93% of the bank's assets are their own equity. The mean of P/E ratio shows the value of the company through calculating its current price in relative to the company's per share earnings. The mean of the P/E ratio is calculated to be 17.21%, exhibiting the typical high P/E ratio of the financial industry. The mean GDP Growth is 2.28% with a maximum of 3.8% trillion and minimum of -.3%. The real interest rate averaged to a moderate 2.55% in the past decade.

Table 1 Panel B:

Foreign Banks - Descriptive Statistics

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
Mean	0.10404	6.59059	0.04351	0.04190	0.03352	2.50649	1.25096
Median	0.10076	6.28004	0.01988	0.04000	0.00212	2.00000	1.65000
Standard Deviation	0.13570	0.79156	0.04918	0.01568	0.14341	3.80593	2.19743
Minimum	-0.58794	5.73093	0.00000	0.01394	-0.00964	-5.60000	-10.70000
Maximum	0.53500	8.40425	0.19377	0.07449	1.21417	14.20000	5.40000
Count	77	77	77	77	77	77	77

Panel B of Table 1 Shows the descriptive statistics for the 7 foreign banks. On average, the 7 foreign commercial banks have an ROE of 10.4%, which is slightly greater than the average of the domestic banks from Table 1 by 1.09%. Showing a better profitability within the banking industry. The mean of the independent variables can vary with the different countries chosen along with the specific banks and the economic standing of each country during the chosen decade. The standard deviation of ROE is 13.57%, showing a larger volatility than that of the domestic banks. The ROE's maximum is 53.5%, its minimum is at -58.79% and the medium is a similar value to the mean at a 10.08%.

The mean of Asset size (logA) is 6.59, once again greater than the average logA value from the 10 domestic banks. The mean of the cash adequacy ratio is 4.35%, showing that 4.35 cents for every dollar the average bank puts into its assets is kept on cash. This number is also greater than the domestic banks. The capital adequacy mean is 4.19 %. This shows that the banks have 4.19% of their assets as their own equity. This indicates that the foreign banks tend to have a greater asset size and relative amount of cash than domestic banks. This number specifically is smaller than the domestic banks' result, showing that the overall foreign banks don't invest as much equity in comparison to its assets as domestic banks do. The mean of P/E ratio shows the value of the company through calculating its current price in relative to the company's per share earnings. The mean of the P/E ratio is calculated to 3.35%, a lot lower than the previously analyzed domestic banks, showing that foreign banks stock price is relatively low compared to its company's earnings. The mean GDP Growth is 2.51%, showing a slight but not too large of an increase compared to the U.S. GDP Growth. The real interest rate averages to a moderate 1.25% in the past decade. It is granted to be a smaller value than the US, showing that the banks

are able to lend out loans easier than domestic banks, which also correlates to the company's overall ROE.

Table 1 Panel C:

All Banks - Descriptive Statistics

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
Mean	0.09760	5.87407	0.03297	0.06979	10.14003	2.37433	2.01243
Median	0.09959	6.09972	0.02325	0.06938	8.45755	2.40000	1.90000
Standard Deviation	0.11002	1.05080	0.03432	0.03051	43.71305	2.55616	1.82862
Minimum	-0.58794	2.90590	0.00000	0.01394	-163.94444	-5.60000	-10.70000
Maximum	0.53500	8.40425	0.19377	0.15483	556.00000	14.20000	5.40000
Count	187	187	187	187	187	187	187

The descriptive statistics for all 17 banks are presented under Panel A of Table 1. The average of all 17 domestic and foreign banks have an ROE of 9.76%, a higher value than the 10 domestic banks, and a slight lower value than the 7 foreign banks. The 9.76% continues to show a healthy average profitability within the banking industry. The standard deviation of ROE is 11%, showing a higher value than the domestic banks and a lower value than the foreign banks. The maximum and minimum are the same values from the foreign bank analysis, which is still a large spread, but the overall standard deviation decreased due to the smaller ranges from the domestic data. The medium is at 9.96%, very similar to the mean value of the pooled data of all 17 banks.

The mean of Asset size (logA) is 5.87, and the mean of the cash adequacy ratio is 3.3%, in between the lower value of the domestic banks and the higher value from the international banks. The capital adequacy average is 6.98 %, in between the foreign banks with the lower value and the higher value from domestic banks. The mean of the P/E ratio is calculated to 10.14%, exhibiting a slightly low P/E ratio for the typical financial industry. The mean GDP Growth is 2.37%, and the real interest rate averaged to a moderate 2.01% in the past decade. The macroeconomic variables are varied by the 7 different economies that are analyzed in this study.

IV.2 CORRELATION EVALUATION

Table 2 Panel A:

U.S. Banks – Correlation between Independent Variables

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
ROE	1						
logA	-0.06318	1					
CASH	0.019651	0.022956	1				
CA	-0.05508	-0.38818	-0.10566	1			
P/E	-0.02936	0.072789	0.175552	0.029828	1		
GDP Growth	0.405156	-0.06247	0.135941	0.150441	-0.10566	1	
Real Interest rate	0.175305	-0.04954	-0.0692	-0.30051	-0.07148	-0.162352393	1
Observations	110	110	110	110	110	110	110

Panel A of Table 2 shows the correlations among independent variables. The correlation coefficient shows the movement relationships between two variables. A perfect correlation is 1, or -1, showing a perfect positive or negative relationship. A 0 shows that there are absolutely no relationships between the variables whatsoever. The correlation matrix in Table 2.1 shows all low correlation coefficients, with the highest coefficient at .41. This indicates that there are no strong relationships between any of the variables.

Table 2 Panel B:

Foreign Banks – Correlation between Independent Variables

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
ROE	1						
logA	-0.14382	1					
CASH	0.264685	0.122397	1				
CA	0.328959	0.219907	0.734445	1			
P/E	-0.10732	-0.09876	0.020324	-0.09314	1		
GDP Growth	0.43282	0.045949	0.558408	0.395448	-0.05786	1	
Real Interest rate	-0.02372	0.089395	0.035969	-0.02605	-0.18888	0.010079479	1
Observations	77	77	77	77	77	77	77

Panel B of Table 2 shows the correlations among independent variables from the foreign bank analysis. The correlation coefficient shows the movement relationships between two variables. A perfect correlation is 1, or -1, showing a perfect positive or negative relationship. A 0 shows that

there is absolutely no relationship between the variables whatsoever. Out of the 77 observations analyzed, this table shows no significant correlations between any pair of its variables, with the highest correlation coefficients at .73 between cash adequacy and capital adequacy. This shows a slight positive relationship between those 2 variables for foreign banks.

Table 2 Panel C:

All Banks – Correlation between Independent Variables

	ROE	logA	CASH	CA	P/E	GDP Growth	Real Interest rate
ROE	1						
logA	-0.05223	1					
CASH	0.207519	0.206066	1				
CA	0.028898	-0.54598	0.005486	1			
P/E	-0.02737	-0.06364	0.003022	0.164778	1		
GDP Growth	0.402387	0.033269	0.510695	0.115571	-0.04002	1	
Real Interest rate	0.026149	-0.18442	-0.07612	0.17229	0.029823	-0.034248463	1

Panel C of Table 2 shows the correlations among independent variables with all banks pooled together, a total of 17 banks with 187 observations. This shows similar results as the domestic bank correlation analysis. The highest coefficient is from asset size and capital adequacy at a negative .55, indicating a slight but not significant negative relationship between the two variables.

IV.3 EMPIRICAL FINDINGS USING POOLED SAMPLE

Table 3 Panel A:

U.S. Banks – Determinants of Return on Equity (ROE): Pooled Sample

Regression Statistics	
Multiple R	0.48189654
R Square	0.23222428
Adjusted R Square	0.18749948
Standard Error	0.0794315
Observations	110

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.03	0.08	0.37	0.71
logA	-0.01	0.01	-0.62	0.53
CASH	-0.28	0.58	-0.49	0.62
CA	-0.35	0.41	-0.86	0.39
P/E	0.00	0.00	0.56	0.58
GDP Growth	0.04***	0.01	5.14	0.00
Real Interest rate	0.02**	0.01	2.37	0.02

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

Panel A of Table 3 shows the estimated regression statistics with the parameters and t-statistics calculated with the ROE. The table shows a collaboration of all of the data from the 10 commercial banks analyzed with a total of 110 observations. It presents the bank-year observations pooled cross-sectional results. The adjusted R –squared is .19, showing a very weak fit for the overall regression. GDP growth shows a high significance with a less than 1% p-value, indicating a strong positive relationship between bank ROE and U.S. GDP growth. Real interest also shows a strong significance with a p-value of .02. This indicates a strong positive relationship between interest rate and the U.S. domestic ROE values. These results indicate that in the past decade, macroeconomic conditions have been the main drivers of the performance of banking industry. The remaining variables show a much higher level of p-value, indicating that there is no significance between the ROE and the other variables analyzed. That is, in this pooled cross section sample, results fail to prove that any of the bank-specific variables is statistically significant in determining profitability. A weak association for the internal factors with profitability include most of the firm specific independent variables. The previously analyzed

literature review by Azam and Siddiqui (2004) shows similar results to the firm's capitalization, and Claessens, S. Demirguc, K & Harry, H. (2001) also shows similar results with variables in relation to net interest margin or loan losses. U. S. banks are also very heavily regulated. Variables such as capital adequacy lack the necessary cross-sectional variation to be attributed to profitability variation.

Table 3 Panel B:

Foreign Banks – Determinants of Return on Equity (ROE): Pooled Sample

Regression Statistics	
Multiple R	0.52979658
R Square	0.28068442
Adjusted R Square	0.2190288
Standard Error	0.11992598
Observations	77

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.22	0.12	1.83	0.07
logA	-0.04**	0.02	-2.12	0.04
CASH	-0.53	0.47	-1.14	0.26
CA	3.04**	1.34	2.26	0.03
P/E	-0.07	0.10	-0.66	0.51
GDP Growth	0.01***	0.00	3.32	0.00
Real Interest rate	0.00	0.01	-0.05	0.96

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

Panel B of Table 3 shows the estimated regression statistics for selected foreign banks. The table shows a collaboration of all of the data from the 7 foreign commercial banks analyzed with a total of 77 observations. The adjusted R-squared is generated to a .22, showing a slight better fit than the domestic bank regression, but still a weak fit. Asset size had a p-value of .04, showing a strong significance and negative relationship of the banks' asset size with its profitability. As sizes increase, banks tend to have more stale assets, which hurts their profitability. Capital adequacy shows a p-value of .03, showing a positive relationship with the banks' capital operations to its ROE. This is different from U. S. banks, as foreign banks rely more on capital adequacy to attract business, hence contributing to profitability growth. GDP growth shows a

high significance with a less than 1% p-value, indicating a strong positive relationship with ROE and foreign GDP growth. As most banks are from the economically troubled Eurozone in the recent decade, the overall economic growth has been an important stimulator for banking industry profits. The remaining variables show a much higher level of p-value, indicating that there is no significance between the ROE and the other variables analyzed. Specifically, it is noticed that real interest rates no longer show statistical significance as in the domestic bank study. All significant interest rates are from the domestic bank analysis, therefore, does not show a significance in the specific foreign bank analysis. Many of the selected foreign banks are from the European Union. The volatile economy from the Eurozone in the past decade have kept the interest rate continuously low rather than accurately reflecting on the companies' performance.

Table 3 Panel C:

All Banks – Determinants of Return on Equity (ROE): 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

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

Panel C of Table 3 shows the estimated regression statistics for both the domestic banks and foreign banks. The table shows a collaboration of all of the data from 17 commercial banks analyzed with a total of 187 observations, presenting bank-year observations pooled cross-sectional results. The adjusted R-squared shows a .17, showing a weak fit of the overall

regression. The intercept shows a p-value of .04. GDP growth shows a high significance with a less than 1% p-value, indicating a strong positive relationship with ROE and GDP growth from the U.S. as well as the selected foreign countries. With the offsetting effects between the domestic and foreign variations, all remaining variables show a much higher level of p-value, indicating that there is no significance between the ROE and the other variables analyzed. The previously significant variables from the domestic and foreign pooled analysis no longer show a significance in the combined analysis due to the fact that the results are skewed towards specific banks that had stronger relationships than others. The following section is broken down to individual banks analysis.

IV.4 INDIVIDUAL BANK ANALYSIS

Table 4 Panel A:

U.S. Banks – Individual Bank Regression Coefficient and T- value

	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)
logA	-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	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)
CA	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	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)
IR	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	10	10	10	10	10	10	10	10	10
Adj. R2	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%

We go on to explore bank-specific profitability determinants. Table 4 Panel A shows the Coefficient and T-value analysis for the domestic commercial banks individually. The statistics with asterisks next to them show certain degree of statistical significance under the p –values. The lower the percentage level the stronger significance it indicates between the variables and dependent variable (ROE).

The variable that had the most effect is the Price to Earnings (P/E) ratio. The P/E ratio is one of the determinants in future growth of the company. 5 different banks show at least a 5% p-levels indicating a high significance even though the coefficients in relation showed no slope to its linear relationship between the plots. This indicates that there is a significant relationship between the change in ROE and the change in P/E ratio for Home Bancshares Inc. J.P. Morgan, KeyCorp, PNC Financial Services Group Inc. and TD bank. However, such significant relationship carries different signs for different banks, showing that each banks' business strategy and public expectations towards profitability varies. An overvalued company may show a negative relationship with P/E ratio even with a high ROE. Each result is skewed by the company's accomplishment as well as their shareholders' value projections.

The Asset Size (logA) has the second most significances with a total of 3 banks having a p –value level of less than 10%. Those banks include Bank of America and Home Bancshares Inc. under 5%, The TCF Financial Corporation at less than 10%. Both Bank of American and The TCF Financial Corporation had a negative coefficient level, which indicates that the banks' asset size is negatively correlated to the company's profitability. This proposes the theory of that just because a bank is large does not mean it generates the most profit. Stale assets may affect the results as they are not being efficiently utilized by the specific firms, showing a negative relationship overall.

There are a few more significant coefficients. Cash Adequacy shows a 10% significance for KeyCorp. The positive coefficient value indicates a positive relationship with KeyCorp's short term assets to its profitability. Capital adequacy has a negative 10% level of significance for TD Bank, showing the company's capital utilization is negatively correlated with its ROE. GDP Growth has a very high level of significance at a less than 1% level for TD Bank. This indicates that the GDP Growth for the overall economy positively correlates with TD Bank's profitability.

The Real Interest Rate had 2 banks that showed a 10% level of significance, indicating that the previous pooled sample results on IR are probably driven by these two banks. The TCF Financial Corporation, and TD Bank: these two banks exhibit a more sensitive and positive relationship with the economy's baseline borrowing rates.

R-squared is the coefficient of determinations, it tells you how many points fall on the regression line and how well it fits the model. Adjusted R square adjusts for the number of terms in the model and is more reliable when you have more than 1 variable. The closer it is to one, the closer the points to the regression line. The highest percentages pulled are TD Bank at 97%, showing a very good fit of the overall regression. Both Bank of America and JP Morgan show an 89% R-squared, with KeyCorp at 88%, and Home Bancshares and TCF Financial Corporation at 86% and 80%.

From the 10 commercial banks that are analyzed, the top performers are TD Bank, Home Bancshares, TCF Financial Corporation, and KeyCorp. TD Bank had a total of 4 variables that shows a significance, with Home Bancshares at 3 significant variables, and then 2 variables for TCF Financial Corporation and KeyCorp. TD has 4 significant variables with both P/E ratio and GDP Growth at less than 1% level, and Capital Adequacy and Interest Rate at the 10% level. TD Bank NA from the United States is also a subsidiary to the Canadian TD Bank based in Toronto Canada. This differentiation compared to the rest of the domestic banks may affect the results as their business approach may be different than the other 9 banks. The rest of the commercial banks are not subsidiaries and are solely operating under the U.S regulations. Home Bancshares has 3 significant variables, with logA and P/E ratio at less than 5% level, and the intercept at 10% level. TCF Financial Corporation has 2 significant variables with both logA and Interest Rate at the 10% level. KeyCorp has 2 significant variables, with P/E ratio at 5% and Cash adequacy at 10%. Citigroup Inc. SunTrust Banks Inc. and Wells Fargo & Company both fail to exhibit any significant variables, indicating that the empirical model in this paper does not capture the mechanism of their profit determination.

Table 4 Panel B:

Foreign Banks – Individual Bank Regression Coefficient and T- value

	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
logA	-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	-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
CA	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	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
IR	-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	10	10	10	10	10	10
Adj. R2	-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%

Panel B of Table 4 shows the Coefficient and T-value analysis for the foreign commercial banks individually. The variable that has the most effect is the P/E ratio, similar to the results from the domestic bank analysis. China Construction Bank shows a less than 5% level of significance and Banco Santander shows a significance in a 10% level. The P/E ratio is one of the determinants of future growth of the company. Banco Santander's negative coefficient value shows that a high market valuation hurts the current profitability, while in a heavily state-owned market like China, China Construction Bank shows a positive relationship between ROE and P/E, showing that it's the market sentiment that drives the volume and hence profitability of business. Banco Santander operated under the economy of Spain. From the time period of 2004-2014, Spain shows a tremendous volatile growth that began with a trade deficit of a tenth of their economy is 2004 to a trade surplus after the recession in the year of 2013. The volatility results in a negative relationship in the P/E ratio as expected due to the uncertainty of the people as well as Banco Santander's investors.

Capital adequacy is the other variable that shows a significance. China Construction Bank has a less than 10% significance level, indicating its negative coefficient value has a negative relationship between the company's capital utilization to its assets with the company profitability. Deutsche Bank, BNP Paribas, UFJ Financial Group, and Union Bank of Switzerland did not show any sort of significance with the selected variables in relation to profitability. GDP growth rate is a significant determinant in the pooled sample, but fails to show any significance for any individual bank. This is probably because it's the inter-country variation of economic growth that is related to profitability variation, not time-series variation within a single country that exhibits the effect. Finally, the Adjusted R-squared are adequately high for BNP Paribas, Barclays PLC, Banco Santander and China Construction Bank, with its values all above 80%. Overall the domestic analysis shows a much higher significance individually compared to the 7 foreign commercial banks.

V. CONCLUSION

Profitability is an important measure for the performance of banks. This study examines the determinants of commercial bank profitability in the United States as well as seven other foreign countries. The pooled cross sectional analysis is applied to data from the 10 domestic commercial banks and the 7 foreign commercial banks. The only variable that shows a significance in the pooled sample of 187 observations with all 17 banks from both the domestic and foreign bank analysis is the GDP Growth variable. It has a very strong significance to a positive relationship, indicating that GDP Growth directly correlates to the commercial banks' profitability. The higher the Growth, the better the health of the overall country, leading to a better banking profitability. Interest Rate shows a strong significance in the domestic analysis, however, it failed to show a significance in the overall pooled study.

In the individual bank analysis, the Interest Rate variable only shows a significance in 2 of the 10 domestic banks, and when pooled, those 2 significant banks failed to make a sway under all 17 banks. From the 17 banks analyzed, China Construction Bank shows the highest ROE ratio

followed by TD Bank. Conveniently, those two banks are the banks that show the most significant variables in relation to the ROE.

TD Bank shows the most significant variables under the domestic bank analysis. TD Bank had a total of 5 significant independent variables with P/E ratio as the strongest relationship at a negative value. This indicates that the value and growth expectations of TD Bank's shareholders and investors negative correlate with the bank's profitability. This leads to a theory of the TD Bank being overvalued. The GDP Growth variable is strongly significant in relation to the ROE. It shows a positive relationship to TD Bank's profitability indicating that an increase in the country's GDP positively affects its profitability and net income. Capital Adequacy shows a significance with a negative relationship with ROE. This indicates that the TD Bank's capital utilization negatively affects its profitability. This result can be skewed by the great recession that is a part of the time period analyzed. Capital investments did not have the return expected, and therefore did not show the projected positive relationship. The Interest Rate shows a significance with a positive relationship, similarity to the health of the country's economy from the GDP growth. The positive relationship indicates that profitability increases from an increase in the country's interest rate as well. This is an interesting finding as investments tend to decrease when interest rates are raised. However, an increase in interest rates also indicates a projected increase of return in future investments.

China Construction Bank is the bank that shows the most significant variables in relation to the ROE ratio for the foreign bank analysis. The P/E ratio shows a significance with a very high positive relationship to the firm's profitability. This indicates that the projected value and growth of the company directly correlates to the company's profits. However, due to the fact that China is controlled strictly under its communist party, the market is not actually a reflection of the investors or shareholders' expectations. It's the result of the government's intervention towards both the market and the bank itself. Capital Adequacy is the 2nd variable that shows a significance with a negative relationship towards profitability. This is also the result for TD Bank under the domestic analysis as well with the negative correlation between capital utilization and its profitability.

The banks that show the strongest significance also shows a high ROE but are not considered the top players in terms of market capitalization under the selected group of banks. Rather, most are

considered under the mid/lower range of the spectrum. Banks such as wells Fargo & Company, Citigroup, Deutsche Bank, and Barclays PLC all have the highest market capitalization, however, it is TD Bank and China Construction Bank that have a medium range market capitalization showing the most significance variables. This concludes that the size of the commercial banks doesn't necessarily determine the profitability. It is the public's expectation of the firm itself and its ability to sustain in the future that determines its overall performance and value.

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