



## Impact of Credit Risk Management on Financial Performance of Banks: A Study on Major State-Owned Commercial Banks in Bangladesh

**Prof. Dr. Md. Ali Noor**

Department of Accounting & Information Systems  
Jagannath University, Dhaka.  
alinoordu@yahoo.com

**Prahallad Chandra Das, ACMA**

Assistant Professor  
Department of Accounting and Information Systems  
Jatiya Kabi Kazi Nazrul Islam University, Mymensingh.  
prahalladdas@yahoo.com

**Bishnu Pada Banik**

Associate Professor  
Department of Statistics, Computer & Mathematics  
Dhaka Commerce College, Dhaka.  
tamal2002@yahoo.com

### Abstract:

Banks play a fundamental role in the economic development. To perform this role an effective banking system is needed and without it, it is difficult for the economy to mobilize the real resources necessary for economic growth and stability. For economic development two basic issues of financing are important; first, how best external funds are provided to the business sectors and second, how efficiently financiers are monitoring the behaviour and performance of these corporate borrowers under an effective system of corporate governance. These two things are the functions of banks and broadly termed as credit management. If credit management is poor then POCL (Percentage of Classified Loan) occurs most. Financial performance of the banks is measured by the profitability and productivity of the banks. Profitability measurements of the banks may be ROI, ROA, ROE and some other types of ratio analysis. This study has been designed to measure the impact of POCL on ROI, ROE and ROA and to test the co-integration among the variables. In the study, it has been found that there exists co-integration among the study variables. In regression analysis, it has also been found that POCL has significant negative impact on ROI. The impact of POCL is not significant on ROA and ROE in the short run. But in the long run, there is significant impact of POCL on ROA and ROE.

**Keywords:** ROI, ROA, ROE, POCL, VECM.

## Introduction

Banks must earn profit and create job opportunities by the re-investment of the earned profit. The earning of profit depends on credit management of banks should be considered as an input of economic development. NCBs & PCBs have serious problems in productive uses of fund, due to default culture, industrial sickness, business failure, lack of good entrepreneurs, unfavourable business climate etc. Problems of Public Sector Commercial Banks are more acute than those of PCBs. Many studies have highlighted profitability, productivity & operational efficiencies of NCBS & PCBS. Banks have been suffering from non performing loan for the decades. Public banks are being suffering most. Loans of the banks are classified as Doubtful, Sub standard and Bad & Loss. Percentage of Classified Loan( POCL) has impact on Profitability ratios such as ROI, ROA, ROE etc.

## Literature Review

**Vatansever & Hepşen (2013)** did this empirical study in **Turkey** and it was published in the Journal of Finance and Investment Analysis. In this study, researchers examined the relationship between the NPLs ratio and several macroeconomic and bank specific factors in Turkey by using ordinary least square estimation approach with integration analysis and the time series from January 2007 to April 2013. They founded from empirical study that debt ratio, loan to asset ratio, confidence index-real sector, consumer price index, EURO/ Turkish lira rate, USD/ Turkish lira rate, money supply change, interest rate, GDP growth, the Euro Zone's GDP growth and volatility of the Standard & Poor's 500 stock market index does not have significant effect to make clear NPL ratio on multivariate perspective. They also founded that industrial production index (IPI), Istanbul Stock Exchange 100 Index (ISE), Inefficiency ratio of all banks (INEF) negatively, and Unemployment rate (UR), return on equity (ROE), capital adequacy ratio (CAR) positively affect NPL ratio.

**Fredrick (2012)** wrote this article in **Kenya** and it was published in the DBA Africa Management Review. The researcher examined the impact of credit risk management on financial performance. He was used in his study a causal research design and multiple regression analysis to analyze secondary data. He

used variables as dependent variable i.e., the financial performance of the banks whereas the independent variables were the CAMEL components of Capital adequacy, Asset quality, Management efficiency, Earnings and Liquidity. In his study he found that there was a strong impact of the CAMEL components on the financial performance of commercial banks. The study also established that capital adequacy, asset quality, management efficiency and liquidity had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. The study suggests that CAMEL model can be used as a proxy for credit risk management. In this study he fails to recognize the impact of effective internal control and explanatory variables of financial performance of bank.

**Poudel (2012)** carried out this study in **Nepal** and it was published in the International Journal of Arts and Commerce. In this study, researcher examined the effect of credit risk management on banks' financial performance. He was used different variables to cover the study which were; default rate, cost per loan assets and capital adequacy ratio called explanatory variable. He collected data from financial report of 31 banks were used to analyze for eleven years (2001-2011) comparing the profitability ratio to default rate, cost of per loan assets and capital adequacy ratio which was presented in descriptive, correlation and regression was used to analyze the data. The study founded that all these parameters have an inverse impact on banks' financial performance; however, the default rate is the most predictor of bank financial performance. The empirical results showed that credit risk management is an important predictor of bank financial performance thus success of bank performance depends on risk management. He recommended that banks should design and formulate strategies that will not only minimize the exposure of the banks to credit risk but will enhance profitability. He also recommended that banks should put more emphasis on risk management and need to allocate more funds to default rate management and try to maintain just optimum level of capital adequacy.

**Mačerinskienė, Ivaškevičiūtė, & Railienė (2014)** conducted this study in the **Lithuania**. Here the researchers' exhibits the influence of recent global financial crisis on credit risk management in the commercial banks and provides summarized

challenges faced by banks for credit risk management improvement. They founded that the causes of recent financial crisis reveal not only systemic or structural imbalances, but the necessity to keep and strengthen the principles of credit risk management. they also founded that the causes of recent financial crisis may be summarized into four major categories: **a) Fundamental:** Global imbalances (current account), Excess elasticity in international monetary and financial system, Labor supply shock, US monetary policy ; **b) Finance Industry:** Extensive borrowing by finance institutions and private sector, Financial disequilibria and asset price bubbles, Information asymmetry and lack of transparency, Low banks' capital, Insufficient level of liquid assets, Deviation from credit risk management principles; **c) Regulatory:** Fragmented regulation/inadequate supervision, Failure of regulators to adapt to finance evolution, No systemic risk regulations, Conflict of interest: rating agencies and issuers of financial instruments; **d) Behavioral:** Short-term and excessive risk-taking incentives, Biased system of incentives, Human/cultural and communicational weaknesses. They suggested that the improvement of credit risk management is firstly associated to following and consolidation of credit risk management principles in everyday operations and strategic management, recognizing the importance of liquidity, improving of risk cultures and managing level of risk, redesigning compensation arrangements, improving internal control, learning lessons from outside the financial services sector.

**Ahemed & Malik (2015)** conducted this empirical study in **Pakistan** and it was published in the International Journal of Economics and Financial Issues. In this study, the researchers focused that the impact of credit risk management (CRM) practices on loan performance (LP) in microfinance banking sector of Pakistan. In this study, the researchers were gathered data from various managerial levels like: Top level, Middle level, and Lower level. He used different variables such as: a) Dependent Variable: Loan Performance (LP), actually which represent CRM; and b) four Independent Variables: Credit Terms (CTP), Client Appraisal (LCA), Collection Policy (CP), and Credit Risk Control (CRC). He also used descriptive and inferential statistical techniques to analyzed data. The study results founded that the credit terms and client appraisal have positive and significant

impact on the LP at 1% significant level, while the CP and CRC have positive but insignificant impact on LP. The researcher hoped that this study results will be helpful to management for proper managing the credit risk and enhancing loan performance by focused on explanatory variables that are credit terms and client appraisal.

**Lalon (2015)** wrote this descriptive research article in **Bangladesh** and it was published in the International Journal of Economics, Finance and Management Sciences. In this article, researcher remarked about the theoretical framework, importance, process, advantage and challenges of CRM. He also pronounces that the CRM practice and performance. Finally he tries to find out if there is any relationship between CRM performance and banks profitability. The researcher used secondary date and analyzed the data by using Ms Excel and SPSS software. In this study, the researcher founded that Credit risk management encompasses identification, measurement, matching mitigations, monitoring and control of the credit risk spotlights. The research result founded that there is a positive relationship between CRM practices and Banks profitability (ROA). This indicated that effective and efficient Credit Risk Management can contribute on banks profitability. He mentioned in his study the main challenges of CRM practices are additional cost for training and employee motivation. He hoped that a very skilful and technically enhanced Credit Risk Management department can contribute to better practices of Credit Risk Management and that ensures smooth recovery of classified loan and maximize profitability of bank.

**Heydari & Abdoli (2015)** wrote this empirical study in **Iran** and it was published in the Indian Journal of Science and Technology. In this study, the researchers focused that the impact of credit risk management and capital adequacy on financial performance of business banks. This is inductive type of study and also called applied research. The prime objective of the researcher is to determine the relationship between the variables. Here they were used ROA( Return on Total Assets) as a dependent variable; and Past due credits and loans to total loans and credits (NLP), Loss reserve on total loans and past due credits (LLP), Total loans and credits ratio to total assets (LA), Liquidity ratio (LR), and Capital

adequacy ratio (CAR) as independent variables. The study results founded that there is a negative relationship between loss reserve on loans and previous maturity of credits and banks performance at 5% significant level but on the other hand, the results showed that there is a positive relationship between liquidity ratio and capital adequacy with banks' performance at 5% significant level.

**Kodithuwakku (2015)** conducted this empirical study in **Sri Lanka** and it was published in the International Journal of Scientific Research and Innovative Technology. In this study, they focused about the impact of credit risk management on the performance of commercial banks. The study was collected panel data from primary and secondary sources from 2009 to 2013 of selected banks based on superior performance and availability of data. The researcher used ROA (Return on Assets) as dependent variable (performance indicator); and Loan provision to Total (LP/TL), Loan Provision to Non-Performing Loans (LP/NPL), Loan Provision to Total Assets (LP/TA) and Non-Performing Loans/ Total Loans (NPL/TL) were used as independent variables (indicators of credit risk). The empirical result exhibited that non-performing loans and provisions have significantly argumentative impact on the profitability. Therefore, the study recommended the banks to implement an effective tools and techniques to reduce the credit risk management.

**Kipnetich & Muturi (2015)** did this empirical study in **Kenya** and it was published in the Strategic Journal of Business & Change Management. In this study, they focused the effect of credit risk management on the financial performance of savings and credit cooperative society. They were used two independent variables namely, capital adequacy and management efficiency; and one dependent variable that was financial performance. They had been used a cross-sectional descriptive research design to assessed the effects and data were collected from secondary sources. They utilized SPSS program to analyze the collected data and draw a regression model. The empirical results showed that capital adequacy and management efficiency had positive and statistically significant relationship with financial performance. This indicated that increase in capital adequacy and management efficiency leads to increase in financial performance.

**Haneef et al (2012)** carried out this empirical study in **Pakistan** and it was published in the International Journal of Business and Social Science, Centre for Promoting Ideas, USA. In this study, the researchers were analyzed the impact of risk management on non-performing loan and profitability of banking sector of Pakistan. The study was mainly secondary data based. In this study, they argued that there were no proper risk management techniques for managing risk in banking industry in Pakistan. They concluded that non-performing loans were increasing due to lack of risk management which threatens the profitability of banks. They suggested that banking sector can avoid their nonperforming loans by adopting methods suggested by state bank of Pakistan. One of the major drawbacks of the study was that they failed to justify their conclusion with empirically.

**Charles, Okaro & Kenneth (2013)** conducted this empirical study in **Nigeria** and it was published in the Journal of Emerging Issues in Economics, Finance and Banking. In this study, they examined the impact of credit risk management on capital adequacy and banks financial performance in Nigeria. For this purpose six banks were selected by using positive sampling technique. Data were obtained from the published financial statements from 2004 to 2009. Panel data model was used to estimate the relationship that exists among Loan Loss Provisions (LLP), Loans and Advances (LA), Non-performing Loans (NPL), Capital Adequacy (CA), and Return on Assets (ROA). The empirical results showed that sound credit risk management and capital adequacy related positively on banks' financial performance with the exception of loans and advances which was found to have a negative impact on banks' profitability in the period under studied. Based on the findings, they recommended that Nigerian banks establish appropriate credit risk management strategies by conducting rigorous credit appraisal before loan disbursement and drawdown. They were also recommended that adequate attention to be paid for Tire-one capital of Nigerian banks.

## Objectives of the study

**The main objectives of this study are-**

- i) to measure the impact of POCL on ROI, ROE and ROA
- ii) to test the co-integration among the variables

iii) to check whether the long term or short run causality exists between dependent and independent variables.

### Research Questions:

- i) Is there any influence of POCL on ROI, ROE, ROA?
- ii) To what extent does POCL influence ROI, ROE, and ROA?
- iii) How are POCL, ROI, ROE, and ROA co-integrated?
- iv) What is the causality between dependent and independent variables?

### Methodology

Data have been collected from secondary sources, that is from the annual reports of the selected banks for specific time period. The banks have been selected as main public commercial banks – Sonali, Janata, Agrani and Rupali. Data on Profitability measurements of the banks as ROI, ROA, ROE have been collected. Average of the variables has been calculated for the selected banks. This study has been done to measure the impact of POCL on ROI, ROE and ROA by using simple regression analysis and to test the co-integration among the variables using STATA software. And then VECM model has been applied on the co-integrated study variables to check whether the long term or short run causality exists between dependent and independent variables.

### Hypothesis

Ho1 : POCL has no significant impact on ROI.

Ho2 : POCL has no significant impact on ROA.

Ho3 : POCL has no significant impact on ROE.

For economic development two basic issues of financing are important; first, how best external funds are provided to the business sectors and second, how efficiently financiers are monitoring the behaviour and performance of these corporate borrowers under an effective system of corporate governance.

## Analysis and Findings

**Table-1: Averages of ROI, ROA, ROE and POCL of the banks during 2000-2015**

Average (%)				
Year	ROI	ROA	ROE	POCL
2000	3.86	0.30	7.69	40.37
2001	4.58	0.42	8.85	35.33
2002	5.31	0.48	8.08	24.52
2003	6.02	0.64	9.38	19.10
2004	5.63	0.72	12.22	22.53
2005	6.63	1.35	15.53	19.74
2006	6.25	1.26	17.15	22.65
2007	6.96	0.86	8.81	31.67
2008	7.47	1.00	12.82	23.94
2009	8.03	0.89	12.08	19.07
2010	10.06	1.06	12.54	13.49
2011	7.54	1.01	11.55	10.14
2012	7.15	-2.65	-92.27	23.37
2013	8.25	1.03	17.20	18.32
2014	8.66	0.47	6.20	18.04
2015	8.13	0.24	1.59	18.20

Source: Annual Reports

## Analysis in Stata

**Table-2: Regression results ROI vs. POCL**

Source	SS	Df	MS	Number of obs = 16		
Model	22.2450141	1	22.2450141	F( 1, 14) =	19.12	
Residual	16.284832	14	1.16320229	Prob > F =	0.0006	
Total	38.5298462	15	2.56865641	R-squared =	0.5773	
				Adj R-squared =	0.5472	
				Root MSE =	1.0785	
ROI	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
POCL	-.1575923	.0360368	-4.37	0.001	-.2348835	-.080301
_cons	10.45868	.8555094	12.23	0.000	8.623793	12.29356

**Table-3: Regression results ROA vs. POCL**

Source	SS	Df	MS	Number of obs = 16		
Model	.435236217	1	.435236217	F( 1, 14) =	0.50	
Residual	12.2840643	14	.877433167	Prob > F =	0.4928	
Total	12.7193006	15	.84795337	R-squared =	0.0342	
				Adj R-squared =	-0.0348	
				Root MSE =	.93671	
ROA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
POCL	-.0220435	.0312986	-0.70	0.493	-.0891724	.0450854
_cons	1.064141	.7430263	1.43	0.174	-.5294923	2.657773

**Table-4: Regression results ROE vs. POCL**

Source	SS	Df	MS			
				Number of obs =	16	
Model	40.8144151	1	40.8144151	F( 1, 14) =	0.06	
Residual	10162.4601	14	725.890009	Prob > F =	0.8160	
				R-squared =	0.0040	
Total	10203.2745	15	680.218302	Adj R-squared =	-0.0671	
				Root MSE =	26.942	
ROE	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
POCL	-2.134643	0.9002309	-0.24	0.816	-2.144268	1.717339
_cons	9.148102	21.37138	0.43	0.675	-36.68895	54.98515

From the regression analysis, it is found that  $P > F = 0.0006$ , it concludes that POCL (Percentage Of Classified Loan) has significant negative impact on ROI (Return On Investment). Regression co-efficient  $b = -0.16$  indicates that 16% changes in ROI can be explained by POCL.

Again from regression analysis of POCL on ROA, it is found that  $P > F = 0.49$ , it concludes that POCL (Percentage Of Classified Loan) has not significant impact on ROA (Return On Asset). Regression co-efficient  $b = -0.02$  indicates that only 2% changes in ROA can be explained by POCL.

Again from regression analysis of POCL on ROE, it is found that  $P > F = 0.82$ , it concludes that POCL (Percentage Of Classified Loan) has not significant impact on ROE (Return On Equity). Regression co-efficient  $b = -0.21$  indicates that only 21% changes in ROE can be explained by POCL.

```
. tsset Year, yearly
Time Variable   : Year, 2000 to 2015
delta          : 1 year
.vecrank ROI ROA ROE, trend (constant)
```

**Table-5: Johansen tests for cointegration**

Trend: content Sample: 2002-2015				Number of obs = 14 Lags = 2	
Maximum rank	parms	LL	eigenvalue	Trace statistic	5% critical value
0	12	-75.02751	.	39.9725	29.68
1	17	-59.893243	0.88491	9.7040*	15.41
2	20	-56.105187	0.41792	2.1279	3.76
3	21	-55.041236	0.14101		

```
. tsset Year, yearly
Time Variable   : Year, 2000 to 2015
delta          : 1 year
.vecrank ROI ROA ROE, trend (constant) max
```

**Table-6: Johansen tests for cointegration**

Trend: content Sample: 2002-2015				Number of obs = 14 Lags = 2	
Maximum rank	parms	LL	eigenvalue	Trace statistic	5% critical value
0	12	-75.02751	.	39.9725	29.68
1	17	-59.893243	0.88491	9.7040*	15.41
2	20	-56.105187	0.41792	2.1279	3.76
3	21	-55.041236	0.14101		
Maximum rank	parms	LL	eigenvalue	Trace statistic	5% critical value
0	12	-75.02751	.	30.2685	20.97
1	17	-59.893243	0.88491	7.5761	14.07
2	20	-56.105187	0.41792	2.1279	3.76
3	21	-55.041236	0.14101		

```
. tsset Year, yearly
Time Variable   : Year, 2000 to 2015
delta          : 1 year
.vec ROI ROA ROE POCL, trend (constant) lags (3)
```

**Table-7: Vector error-correction model**

Sample: 2003-2015		No. of obs =	13
		AIC =	-18.30326
Log Likelihood =	161.9712	HQIC =	-18.68736
Det (Sigma-ml) =	1.77e-16	SBIC =	-16.43458

**Hypothesis-1**

**Ho:** No co-integration among the study variables Vs

**Hi:** There exists co-integration among the study variables.

From Johanson test for co-integration, we have obtained the following results-

Since the value of Trace statistic is greater than Critical Value for 0 rank, so we can reject null hypothesis. That is we can accept alternative hypothesis that there is co-integration among the variables.

**Hypothesis-2**

**Ho:** There is one co-integration among the study variables.

Since the value of Trace statistic is less than Critical

Value for 1 rank, so we can not reject null hypothesis. That is we can accept null hypothesis that there is one co-integration among the variables.

### Hypothesis-3

**Ho:** There is one co-integration among the study variables.

Since the value of Trace statistic is less than Critical Value for 2 rank, so we can not reject null hypothesis. That is we can accept null hypothesis that there is two co-integration among the variables.

So, we can conclude that there exists co-integration among the study variables.

Since there exists co-integration among the study variables, we can use VECM (Vector Error Correction Model) for the study variables to justify the long-run or short-run relationship among the variables.

To introduce VECM model to our data, we have use lag 3 y applying lag selection criteria on the basis of the values of LR, AIC, HQIC and SBIC. By applying VECM model, We have the following results from the analysis,

It is found that co-efficient which is known as error correction term is significant but it is not negative, so it can be concluded that there is no long term causality of ROI with POCL.

But 2nd and 3rd co-efficient have been found significant and negative. So, it can be concluded that there is short term causality between ROI and POCL.

It has been found that with ROA, POCL has long run causality, but not short run causality.

It has also been found that with ROE, POCL has long run causality, but not short run causality.

**Table-8: VECM model**

Equation	Parms	RMSE	R-sq	Chi2	P>chi2
D_ROI	10	1.02794	0.7909	11.34787	0.3311
D_ROA	10	0.98591	0.8957	25.76962	0.0041
D_ROE	10	20.9911	0.9426	49.23291	0.0000
D_POCL	10	5.14291	0.8294	14.58908	0.1478

		Coef.	Std. Err.	z	p> z	[95% Conf. Interval]	
D_ROI	_cel						
	L1.	1.038193	0.4692355	2.21	0.027	.1185078	1.957877
	ROI						
	LD.	-2.172702	0.8936743	-2.43	0.015	-3.924271	-.4211327
	L2D.	-3.126547	1.230485	-2.54	0.011	-5.538254	-.7148408
	ROA						
	LD.	-1.021607	2.091056	-0.49	0.625	-5.120002	3.076787
	L2D.	3.646097	2.441629	1.49	0.135	-1.139407	8.431602
	ROE						
	LD.	0.0476661	.0701894	0.68	0.497	-.0899026	.1852349
	L2D.	-.1146537	.0800421	-1.43	0.152	-.2715333	.0422258
	POCL						
	LD.	-.2681389	.1189256	-2.25	0.024	-.5012288	-.035049
	L2D.	-.1500367	.0961527	-1.56	0.119	-.3384926	.0384191
_cons	1.101636	.4626366	2.38	0.017	.1948846	2.008387	
D_ROA	_cel						
	L1.	-.1595466	.45005	-0.35	0.723	-1.041628	.7225352
	ROI						
	LD.	.7891468	.8571358	0.92	0.357	-.8908065	2.4691
	L2D.	-.8492813	1.180174	-0.72	0.472	-3.162381	1.463818
	ROA						
	LD.	-2.240358	2.005559	-1.12	0.264	-6.171182	1.690466
	L2D.	1.497607	2.341798	0.64	0.522	-3.092234	6.087447
	ROE						
	LD.	.0654232	.0673196	0.97	0.331	-.0665208	.1973672
	L2D.	-.0490768	.0767694	-0.64	0.523	-.199542	.1013885
	POCL						
	LD.	-.0083155	.1140631	-0.07	0.942	-.2318751	.2152441
	L2D.	.0018716	.0922213	0.02	0.984	-.1788789	.1826221
_cons	.0072308	.4437209	0.02	0.987	-.8624461	.8769077	
D_ROE	_cel						
	L1.	-6.02078	9.582065	-0.63	0.530	-24.80128	12.75972
	ROI						
	LD.	24.38635	18.24935	1.34	0.181	-11.38172	60.15443
	L2D.	-24.28521	25.12723	-0.97	0.334	-73.53367	24.96325
	ROA						
	LD.	-67.19035	42.70059	-1.57	0.116	-150.882	16.50127
	L2D.	49.32987	49.85949	0.99	0.322	-48.39294	147.0527
	ROE						
	LD.	1.963096	1.433309	1.37	0.171	-.8461377	4.409483
	L2D.	-1.584941	1.634506	-0.97	0.332	-4.788514	1.618632
	POCL						
	LD.	-.3503501	2.428531	-0.14	0.885	-5.110183	4.409483
	L2D.	.7399111	1.963495	0.38	0.706	-3.108468	4.58829
_cons	.6660801	9.447312	0.07	0.944	-17.85031	19.18247	

D POCL	_cel						
	LI.	-2.501876	2.347643	-1.07	0.287	-7.103172	2.099419
	ROI						
	LD.	.4983392	4.471162	0.11	0.911	-8.264977	9.261655
	L2D.	4.812371	6.156268	0.78	0.434	-7.253692	16.87843
	ROA						
	LD.	8.629424	10.46181	0.82	0.409	-11.87534	29.13419
	L2D.	10.9228	12.21577	0.89	0.371	-13.01967	34.86526
	ROE						
	LD.	-.2316446	.3511662	-0.66	0.509	-.9199178	.4566285
	L2D.	-.3487331	.4004602	-0.87	0.384	-1.133621	.4361546
	POCL						
	LD.	.4935814	.5949994	0.83	0.407	-.672596	1.659759
	L2D.	.3414048	.4810638	0.71	0.478	-.6014629	1.284273
	_cons	-1.146266	2.314628	-0.50	0.620	-5.682852	3.390321

**Table-9: Cointegrating equations**

Equation	Parms	Chi2	p>chi2
_cel	3	7192.275	0.0000

**Table-10: Johansen normalization restriction imposed**

beta	Coef.	Std. Err.	z	p> z	[95% Conf. Interval]
_cel					
ROI	1	.	.	.	.
ROA	-.3337834	.4683737	-0.71	0.476	-1.251779 .5842122
ROE	.063713	.0244224	2.61	0.009	.015846 .11158
POCL	.2896283	.0188421	15.37	0.000	.2526984 .3265582
_cons	-13.08004	.	.	.	.

## Conclusion

This study has been designed to measure the impact of POCL on ROI, ROE and ROA and to test the co-integration among the variables. In the study, it has been found that there exists co-integration among the study variables. In regression analysis, it has also been found that POCL has significant negative impact on ROI. But the impact of POCL is not significant on ROA and ROE. It has been found that co-integration exists among the study variables. It has also been found that there is short run causality between POCL and ROI. But there is long run causality between POCL and ROE and also between POCL and ROA. That is, there exists significant impact of POCL on ROA and ROE in the long run. Further study can be performed to find both short term and long term impact of POCL on ROA and ROE.



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