INTERNAL CAPITAL REQUIREMENT ASSESSMENT AND PERFORMANCE OF BANKING INDUSTRY IN UGANDA: A CASE STUDY OF PRIVATE COMMERCIAL BANKS

Twesige Daniel[*]

Dr. Mwirumubi Richard[**]

Ass. Prof. Mugerwa Erie B[***]

Abstract:

The study examined the effect of internal capital requirement assessment on the performance of commercial banks in Uganda taking private commercial banks as the case study. A combination of qualitative and quantitative research design was used. A population of 22 commercial banks was selected from which a sample of 19 commercial banks was determined using Krajicie and Morgan formula. Data was corrected from both primary and secondary sources using questionnaires and on desk research. Data was analyzed using a statistical package for social sciences (SPSS). The relationship was determined using regression equation.

The results from the survey indicated that internal there is a strong relationship between internal capital requirement assessment and performance of the banking as indicated by R square and adjusted R square.

From the survey the researcher concluded that internal capital requirement assessment is a key component in the performance management of the banking sector, therefore, banks should

[*] **Ph.D Student Nkumba University**

[**] **Lecturer Nkumba University Entebbe Uganda**

[***] **Lecturer Nkumba University Entebbe Uganda**

frequently assess their level of expected losses, unexpected losses, going concern situation, gone concern and validate the capital models continuously in order to maintain good quality and quantity of capital on their balance sheet.

Key Words: Internal Capital Requirement, Performance, CAMELS, Capital

1.0   Introduction

The theoretical literature emphasises the role of capital in reducing the probability of insolvency and closure for the bank, both in static (Yellen 2010) and dynamic (European Central Bank 2010). Banking capital has multiple effects on the performance of the banking industry, some of which counteract each other, making it difficult to learn much.

Capital helps the bank to cope more effectively with risk, but it also reduces the value of the deposit insurance put option (Merton 1993). Further, capital improves the bank's incentive to monitor its borrowers (Rime 2001), but it may also lead to lower liquidity creation (Ngo 2008). During a crisis, risks are elevated and the risk-absorption capacity of capital becomes paramount. Banks with higher capital are better buffered against the shocks of the crisis, and may thus gain a competitive advantage over their lower-capital counterparts.

Capital within financial institutions is not that easily defined as it is in non-financial institutions. Capital in the nonfinancial institution can be defined as the amount equity capital in the bank's balance sheet. Within banks, one can divide between at least three capital concepts (Bos, 1999). The first concept is the concept of *accounting capital*, *Regulatory capital and the economic capital.*

Accounting capital is the amount of equity capital in the bank's balance sheet. It can best be compared with the amount of capital defined for non-financial institutions above. If one wants to calculate the performance of an entity by a well-known indicator as the return on capital (RoC), one would use this concept of capital (Tobias and Amit 2011).

The second concept of capital is the *regulatory capital* requirement, also known as solvency. It is the amount a bank has to keep in order to meet the capital adequacy requirements as set by the regulator. This refers to the amount of equity capital that with limit as part of regulatory capital. A performance indicator using solvency is the so-called return on solvency (RoS) (Tobias and Amit 2011).

The RoS has to be preferred over the RoC for at least one reason. Solvency is a scarce resource. Therefore, one wants to know what entity uses this scarce resource best. This comparison can then best be made by the RoS. However, a problem with solvency is that it can only be calculated if there is a capital charge. If there is no solvency, one cannot calculate the RoS and a good comparison is not possible.

To overcome this problem of management control, a third capital concept is *economic capital*. Economic capital is the amount of equity that is required to cover for unexpected losses within a certain confidence level and a certain time period. One could say that it is the internal equivalent of solvency (Bos, 1999). If one knows the amount of economic capital required for a certain activity, one can calculate a performance indicator called return on economic capital (RoEC) (KPMG 2011).

Concept of Capital
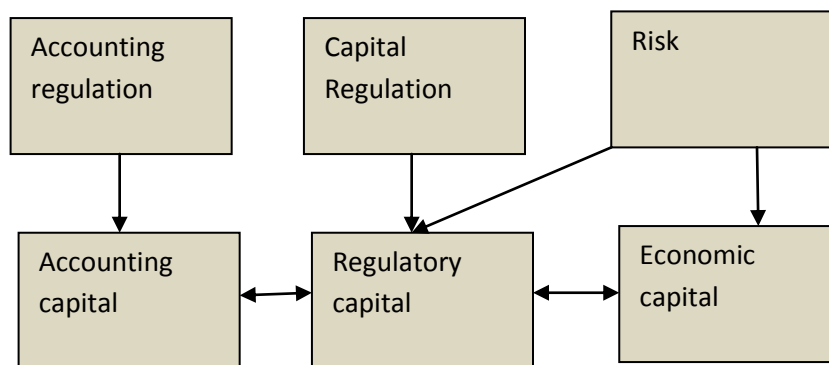
Source: Berg-Yuen and medova (2005)

Figure 1.1: The concept of Capital

Economic Capital in the banks represents a buffer against losses that may arise in the event of imprudent risk management practices. It is also a permanent source of funding that provides a

base for future growth. It is therefore imperative that banks remain adequately capitalised in order to ensure public confidence in the sector (BOU 2008).

Classification of Banks' Capital According to Risk
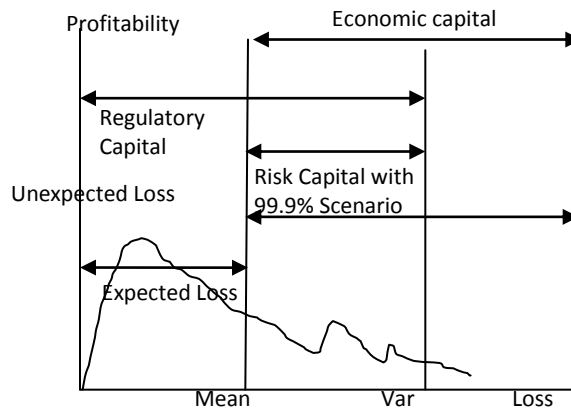
Source Chalupka and Tply (2008)

Figure 2.2:Classification of Banks' Capital According to Risk

A sound financial health of financial institutions plays a vital role in both micro and macro-economic stability of the country (Habyarimana 2003). Performance is a crucial input in ensuring a sound financial health of the banking sector. Banking crises in developed and developing countries are common and costly. Caprio and Klingebiel (2002) indicate that there have been as many as 112 episodes of banking crises in 93 countries since the late 1970s. Banking crises have been estimated to cost up to 50% of the country's GDP (Klingebiel and Honohan, 2000). According to Caprio and Klingebiel (2002), Bank of Uganda (2000, 2010), KPMG (2010) and Matama (2008), banking crisis is as a result of poor performance of the banking sector which emanates from imprudent risks management, poor quality and quantity of capital, ineffective allocation of capital to business units and bank governance.

In a quest to solve the problem of poor performance in the banking sector, the Basel Committee on the Bank Supervision was established in 1987. The Committee provides guidelines on the capital adequacy, capital allocation and risk management framework of commercial banks in order to ensure that banks remain resilient from various shocks. In 1989, the Central Bank of

Uganda implemented the Basel Committee on Bank Supervision guidelines regarding the capital adequacy regulations mechanisms, risk management and capital allocation policies. The minimum capital requirement was established at four billion Uganda shillings and the capital adequacy ratio was established at 8% of the Risk Weighted Assets (RWA) (Bank of Uganda 1989, Basel Committee on Bank Supervision 1988)

Following the bank failures, BOU responded by conducting a comprehensive review and strengthening of the legal, regulatory and supervisory framework. Bank of Uganda did this through adopting risk based supervision, revising minimum capital requirements from four billions Uganda shillings to twenty five billions Uganda shillings to meet levels of assumed risks in order to cushion sound health of financial institutions (SFIs) against potential losses and assessing adequacy of Risk Management Programs (RMP) in SFIs (BOU 2001, 2005, 2010).

In spite of the comprehensive review of the regulatory framework of the banking sector which increased in minimum capital requirements to twenty five billions Uganda shillings, private commercial banks in Uganda have continued to collapse. For example, in early 2000s and in the year 2012 and 2014, more privately owned commercial banks collapsed; Sembule commercial bank was liquidated due to excessive losses that affected the capital of the depositors, Nile commercial bank was sold, Bank of Commerce was liquidated and also Global trust bank was also liquidated due to excessive losses, insider trading that affected the asset quality, profitability and the capital that threatened the capital of depositors (BOU 2002, 2005, 2012, 2014). This, therefore, create a puzzle as to whether regulatory measures defined in the Basel framework and the central bank of Uganda can safeguard banks from failure.

According to KPMG (2010), one of the major lessons learnt from the different episodes of banks failures is that, the regulatory capital framework alone cannot buffer banks from insolvent. Although, theories against this evidence have been developed in developed economies, KPMG (2010, 2011), Ngo (2008), Noss and Toffano (2014) and Piergiorgio and Mathias (2010), there is no study that has been carried out in Uganda to support this evidence. It is within this context that the researcher wants to examine the effect of internal capital requirement assessment in the

performance management of private commercial banks in Uganda in order to develop a bank business model that will help banks to remain resilient to shocks.

2.0 Internal Capital Requirement Assessment and Performance of Banking Sector: A theoretical Framework of Analysis

Capital in the banking industries is one of the key factors that affect the stability of the banking sector (KPMG 2011). According to Matten (2001) a poorly capitalised bank runs the risk of losing market confidence and reputation. Excess capital acts as a buffer against costs that may occur due to unexpected losses and difficulties in raising new capital (Kjersti-Gro 2003). According to Martin (1998:11) capital exhaustion is one of the major factors that lead to bank failure in low income countries. According to BOU (2008), capital in banks represents a buffer against losses that may arise in the event of imprudent risk management

Internal Capital requirement assessment in the banking industries is one the key factor that affects the stability of the banking sector (KPMG 2011). According to GoU (2005) capital adequacy in Uganda is composed of core capital and supplementary capital. Capital adequacy is assessed both in terms of the required minimum paid up capital unimpaired by loss and the on-going capital adequacy requirements which should be consistent with the risk taken on by the banks (BOU 2010). Capital adequacy in the banking institutions is measured in relation to the relative risks of assets held both on and off balance sheet (BoU 2010).

According to the banking laws of Uganda all financial institution in Uganda must at all times maintain a core capital of not less than 8% and a total capital of not less than 12% of the total risk adjusted assets plus risk adjusted off balance sheet items (BoU 2005). The minimum capital funds unimpaired by losses of a licensed bank shall, at any one time, not be less than Uganda shillings four billion.

The Financial Institutions Instrument No. 43 (Revision of Minimum Capital Requirements for Banks) of 2010 was gazetted on 3rd November 2010. The instrument raised minimum paid-up capital requirements from Ushs.4 billion to Ushs.25 billion. The revised capital requirements are aimed at providing banks with sufficient capital to support growth, cushion risk and, harmonise

minimum capital requirements for banks within the East African Community (EAC) countries. This is the most prevalent risk that pervades all the Bank departments and operating units with the highest concentration in banking, financial markets, accounts, currency, and medical departments (GoU 2005).

In order to ensure that banks remain resilient from different shocks, the Basel Committee on Banking Supervision introduced the Basel I capital accord in 1988. This accord aimed at enhancing the regulatory capital framework of commercial banks through calculation of market and credit risks. Due to inefficiencies in the Basel I Capital Accord, in 1998 Basel Committee on banking supervision (BCBS) introduced the Basel II Capital Accords. This accord is based on three pillars where pillar I is about minimum capital requirements, pillar II about supervisory requirements and pillar III is about market discipline (BSCB 1988:20).

Conceptual Framework

Independent Variable: **Dependent Variable:**

Internal   capital assessment Requirement   **Bank Performance**

Independent Variable: Internal capital assessment Requirement	Dependent Variable: Bank Performance
• Expected losses • Unexpected losses • Going concern • Gone concern • Validation of capital models	• Capital adequacy • Asset quality • Management efficiency • Earnings • Liquidity • Sensitivity

Moderating Variables

Researcher: (2016)

- Size
- Accounting capital
- Leverage
- Government policy

Figure 2.1 conceptual framework

Losses are one of the core factors that erode the banking capital. Evidence on bank failure in the various parts of the world suggests excessive losses that degrades the banking capital is one of the majors causes of the bank failure KPMG 2011, 2010, BOU 2000, 2012, 2014). A case in point, banks like the National Bank of Commerce and the Global Trust banks were liquidated by Bank of Uganda due excessive losses that threatened the deposits of the customers.

The losses affecting the banking sector can be divided into two which are; the expected losses which are covered the bank's regulatory capital and the unexpected losses that should be covered by the bank's internal capital. According to Basel (2004), banks should maintain a certain capital above the regulatory requirements to cater for the unexpected losses for different risks. This capital should be calculated using internal models.

One of the conundrums in the internal capital requirement is the validation of the capital models (Basel 2009). The environment in which banks operates is dynamic; therefore, banks should continuously monitor their models to capture any changes in the environment. Inevitably, some risk limits will need to be adjusted as conditions change, raising a tricky question for banks. All banks would agree that the limit system has to reflect the latest results from stress tests; another factor is the latest P&L, which is, after all, a record of how much risk has materialized and been absorbed. Banks have to make a judgment call about how much these deviations from the plan should be reflected in the limit system. One good way to address this question is to send proposed adjustments to the risk-strategy, enterprise-risk, or asset-liability committees.

3.0 Methodology

In this study, the researcher used a combination approach composed of positivism and phenomenology approach. As noted by Saunders et al (1999), positivism approach is good when the emphasis of the study involves explaining some theories. On the other hand, a phenomenology approach is good when the study involves developing theories. This study, involved both developing theories and explaining theories on economic capital and performance of private banking sector, therefore, a combination approach was preferred.   More still, a Positivism approach is used where the study involves developing a theory and then designs a research strategy to test the hypothesis (Saunders et al 1999).   Whereas a Phenomenology

approach is used where the researcher has to collect data and develop the theory as a result of the data analysis (Saunders et al 1999).

Study Population

This study was based on private commercial banks in Uganda. Currently, there are twenty four banks two government banks, twenty foreign banks and two domestic or local banks (BOU 2012).

Sample Size

The sample size was determined using the formula of Krejiciea and Morgan (1970). According to BOU (2012) there are twenty two (22) private banks in Uganda. The formula for determining a sample size of a known population size as Krejicea and Morgan is given by:

$$n = \frac{x^2 NP(1-P)}{d^2(n-1) + X^2 P(1-P)}$$

Where: n is the sample size, X^2 is the Chi square, N is the total population size, P is probability of success and d^2 is the degree of freedom. According to Krejicea and Morgan (1970), at the degree of freedom (d^2) of 1% (0.01), the Chi square (X^2) is 6.64. The probability of success (P) is 50% (0.5)

Substituting in the formula:

$$n = \frac{6.64 \times 22 \times 0.5(1-0.5)}{0.01 x 21 + 6.64 \times 0.5 \times 0.5} \Rightarrow n = 19$$

The respondents within the selected population were selected purposively. Since the study required people with technical knowledge about the study, the respondents within each bank were selected using purposive judgement. Purposive sampling is that technique in which you select a sample basing on your judgement on how that sample will enable you to answer your questions and to meet your objectives (Saunders et al 1999). Ten customers from each bank ware randomly selected.

Qualitativeand Quantitative Data Collection

The qualitative data was corrected through the use of interview and the quantitative data was collected by the use of questionnaire.

On Desk Research

The last approach that was used in data collection was the documentation of literature search. This was done in order to establish the risk management process, the risk models used, performance measurement techniques applied and how risk models are incorporated into the economic capital models.

Qualitative and Quantitative Data Analysis

The views that were obtained from the interview were summarised into the excel software table from which analysis was made. Data was classified and organised into themes using mother and child nodes as indicated by Kakuru (2008). The survey data that was generated from the questionnaires was analysed using both exploratory and confirmatory statistical techniques. After receiving the completed questionnaires from the field, a data entry capture template was designed in the Statistical Package for Social Scientists (SPSS) which was used for data entry.

Measurement of Study Variable

According to Mugenda (2008) a variable is defined as a measurable characteristic that assumes different values among units of a specific population. Variables can be classified into independent and dependent (Mugenda 2008). Independent variable is a one which is manipulated to determine its effect on another variable. On the other hand a dependent variable is a one that is influenced by other variable. Moderating variable is a one that is likely to influence the researcher's results.

The independent variable which is internal capital requirement assessment was measured in terms of expected losses, unexpected losses, going concern, gone concern, and validation of capital models. Basing on the Basel framework and Bank of Uganda, bank performance can be measured using the CAMEL framework. Unlike in the previous studies, and the results indicated in this study, where performance have been analysed using the CAMEL only, in this study the

sensitivity (S) have been included in the model. In this study, the performance of banking sector is analysed using the CAMELS that is Capital Adequacy (CQ), Asset Quality (AQ), Management Efficiency (ME), Earning (E), Liquidity (L), and Sensitivity (S).

The second objective analyses the effect of internal capital requirement on the performance of private banking sector banks.

$BP = f(ICR)$

$BP = \beta 0 + \beta 1 ICR$ …………………………………………………………………………3.1

The Internal Capital Requirement (ICR) = f(Expected losses (EL), Unexpected losses (UL), Going concern (GC) , Gone Concern (GN) Validation of Capital Models (VC).

$ICR = \beta 0 + \beta 1 EL + \beta 2 UL + \beta 3 GC + \beta 4 GN + \beta 5 CV + e$ …………………………………3.2

Substituting equation 13 in equation 12

$BP = \beta 0 + \beta 1 EL + \beta 2 UL + \beta 3 GC + \beta 4 GN + \beta 5 CV + e$ …………………………………..3.3

But the expected losses (EL) and unexpected losses can be defined in terms of value at risk (VaR) of the risks associated with banking activities. In this study the expected and the unexpected losses arises because of three main risks which are credit risks, market risks and operation risks. Therefore, the expected losses and the unexpected losses are defined in terms of credit value at risks (CVaR), market value at risk (MVaR) and operation value at risks (OVaR). The going concern (GC) and the gone concern (GN) are defined in terms of Tier capital (TC) the bank possess which is measured as the value of accounting capital on the balance sheet.

Therefore;

$BP = \beta 0 + \beta 1 CVaR + \beta 2 MVaR + \beta 3 OVaR + \beta 4 TC + \beta 5 CV + e$ …………………………..3.4

Apart from the internal capital requirement, the bank performance is also affected by other variables like economic conditions (IC, Size, (SZ), and Leverage (LV), Government policy (GP), Customer loyalty (CL), and Accounting Capital (AC)

$BP = \beta 0 + \beta 1 CVaR + \beta 2 MVaR + \beta 3 OVaR + \beta 4 TC + \beta 5 CV + \beta 6 IC + \beta 7 SZ + \beta 8 LV + \beta 9 GP + \beta 11 CL + \beta 12 AC + e$ …………………………………………………………..3.5

But the performance of the bank can be assessed in terms of CAMELS

$CQ = \beta 0 + \beta 1 CVaR + \beta 2 MVaR + \beta 3 OVaR + \beta 4 TC + \beta 5 CV + \beta 6 IC + \beta 7 SZ + \beta 8 LV + \beta 9 GP + \beta 11 CL + \beta 12 AC + e$ …………………………………………………………..3.6

$AQ = \beta0 + \beta1CVaR + \beta2MVaR + \beta3OVaR + \beta4TC + \beta5CV + \beta6IC + \beta7SZ + \beta8LV + \beta9GP + \beta11CL + \beta12AC + e$ …………………………………………………….3.7

$ME = \beta0 + \beta1CVaR + \beta2MVaR + \beta3OVaR + \beta4TC + \beta5CV + \beta6IC + \beta7SZ + \beta8LV + \beta9GP + \beta11CL + \beta12AC + e$ ……………………………………………...…3.8

$E = \beta0 + \beta1CVaR + \beta2MVaR + \beta3OVaR + \beta4TC + \beta5CV + \beta6IC + \beta7SZ + \beta8LV + \beta9GP + \beta11CL + \beta12AC + e$ ……………………………………...…3.9

$L = \beta0 + \beta1CVaR + \beta2MVaR + \beta3OVaR + \beta4TC + \beta5CV + \beta6IC + \beta7SZ + \beta8LV + \beta9GP + \beta11CL + \beta12AC + e$ …………………………………….3.21

$S = \beta0 + \beta1CVaR + \beta2MVaR + \beta3OVaR + \beta4TC + \beta5CV + \beta6IC + \beta7SZ + \beta8LV + \beta9GP + \beta11CL + \beta12AC + e$ …………………………………….…3.10

4.0 Results and Discussion

This section shows and discusses the results from the main findings of the study

Table 4. 1: Information on the Extent to which Internal Capital Requirement Assessment Process Affects the Performance of Banking Sector

Responses/process	Not all	Little extent	Moderate	Great extent	Very great extent	Total
Expected & un expected losses				3	15	18
Risk bearing capacity				2	16	18
Validation of capital models			2	4	12	18
Integration of risks			1	5	12	18
Assessment of Going concern				2	16	18
Assessment of Gone concern				6	12	18

Source: Survey Data 2014

Capital adequacy is a key to the survival of the banking sector. According to KPMG (2010), poor quality and quantity of capital fuelled the financial crisis in Europe and USA in 2008 and 2009.

Assessing the internal capital requirement is a key tool in the performance management of the banking sector.

In the table 4.1 above, respondents were asked the extent to which the internal capital requirement assessment affects the banking sector. The results from the survey show that 16.7% of the respondents indicated that expected and un-expected losses affects the bank performance at a great extent and 83.3% indicated a very great extent.

Assessment of risks bearing capacity is very important component in the assessment of the internal capital requirement. The results in the table 4.1 above shows that 11.1% of the respondents indicated that assessment of risk bearing capacity affects the bank performance at a great extent and 88.9% of the respondents indicated very great extent. On the validation of capital models, results shows that 11.1% of the respondents indicated that validation of capital models affects bank performance at a moderate extent, 22.2% indicated a great extent and 66.7% indicated at a very great extent.

The results from the survey further show that 5.6% of respondents indicated that integration of risks in the capital models affects the bank performance at a moderate extent, 27.8% indicated a great extent and 66.7% of the respondents indicated at a very great extent. On the assessment of the going concern, results shows that 11.1% of the respondents indicated that assessment of going concern affect the performance of the banking sector at a great extent and 88.9% indicated at very great extent. The results further show that, 33.3% of the respondents indicated that assessment of gone concern affect the performance of the banking sector at a great extent and 66.7% indicated at very great extent.

The results from the survey shows that assessment of internal capital requirement affects the bank performance as indicated in the table above. The results relates to findings from the previous studies. The study carried out by Goksel (2009) shows that assessment of internal capital requirement affects the bank performance. Similar findings are seen in the studies carried out by Emmen (2001) also show similar findings.

Table 4.1: Effect of Internal Capital Requirement Assessment Processes on Capital Adequacy

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.6	.920[a]	.700	.551	3.62261

a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL

Coefficients[a]

Model: 3.6	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	28.925	11.214		2.579	.033
CVAR	22.997	3.000	2.158	7.666	.001
MVAR	32.268	7.358	1.096	-4.385	.024
OVAR	18.352	3.112	1.337	5.897	.019
SZ	-2.592E-7	.000	-.051	-.046	.964
LV	-13.087	3.107	-.202	-4.212	.026
CL	-4.992	1.020	-.695	-4.894	.021
Validation of capital model	6.239	2.322	.762	2.687	.032
TC	13.593	3.114	1.656	4.3651	.024
GP	4.968E-6	.000	.172	.253	.806

a. Dependent Variable: capital adequacy

Source: Survey Data 2014

Model 3.6 in the table 4.2 above tests the effect of internal capital requirement assessment process and other variables on the on the performance of the banking sector in Uganda. The

results from the survey show that credit value at risk, market value at risks, operation value at risk, level of leverage, customer loyalty, validation of capital models and the accounting capital to be statistically significant. The results from the survey indicated that credit value at risks, market value at risks, and operation value at risks, validation, and accounting capital are positively related to capital adequacy of the banking sector. On the other hand, level of leverage and customer loyalty is negatively related to the capital adequacy of the banking sector.

The results further revealed that there is a strong and positive relationship between internal capital requirement assessment processes, other variables and the capital adequacy of the banking sector as indicated by 70% and 55.1% of R-square and adjusted R-square. This implies that 70% of the variation in the capital adequacy of the banking sector is caused by internal capital assessment and other variables.

Table 4. 2: Effect of Internal Capital Requirement Assessment Process on Asset Quality of the Banking Sector.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.7	.888[a]	.789	.552	1.20464

a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
3.7	(Constant)	8.722	3.729		-2.339	.047
	CVAR	1.975E-5	.000	1.679	3.277	.011

	MVAR	-3.017E-6	.000	-.207	-1.026	.335
	OVAR	-3.986E-5	.000	-1.597	-2.207	.051
	SZ	-4.627E-6	.000	-1.484	-2.476	.038
	LV	3.413	1.033	1.028	3.303	.011
	CL	4.910E-6	.000	1.106	1.431	.190
	Validation of capital model	1.753	.772	.900	2.271	.053
	TC	8.671E-6	.000	.578	1.312	.226
	GP	-2.676E-6	.000	-.150	-.410	.692
a. Dependent Variable: asset quality						

Source: Survey Data 2014

Model 3.7 in table 4.3 above tests the effect of internal capital requirement assessment process and other variables on the asset quality of the banking sector. The results from the survey show there is strong and a negative relationship between internal capital requirements assessment process, other variable and the asset quality of the banking sector as measured by 78.9% of R-square and 55.2% of adjusted R-squared. The most contributing variables to the relationship include credit value at risk, operation value at risk, the size and the validation of the capital models. The results further revealed that there is a positive relationship between credit value at risks, validation and the asset quality of the banking sector. On the other hand, operations value at risks, size and leverage are negatively related to the asset quality.

Table 4.4: Effect of Internal Capital Requirement Assessment Process on Management Efficiency of the Banking Sector.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.8	.808[a]	.65	.424	4.87431

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.8	.808[a]	.65	.424	4.87431

a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
3.8	(Constant)	-37.663	12.620		-2.984	.047
	CVAR	3.278E-5	.000	.166	.156	.880
	MVAR	2.392E-5	.000	.098	.234	.821
	OVAR	.000	.001	.496	.331	.749
	SZ	-4.109E-5	.000	-.786	-.632	.545
	LV	-8.132	3.214	-.146	-2.530	.051
	CL	-10.771	2.250	-.238	-4.787	.012
	Validation of capital model	14.037	4.836	.429	2.903	.049
	TC	.000	.000	.585	.641	.539
	GP	8.691	3.010	.590	2.887	.048

a. Dependent Variable: management efficiency

Source: Survey Data 2014

The model presented in the table 4.4 above tested the effect of internal capital assessment process on the management efficiency of the banking sector. The results from the survey show that, level of leverage, customer loyalty, validation of capital models and the government policies affect the management efficiency. The results further revealed that there is a strong and

negative relationship between internal capital assessment process and management efficiency as measured by 65% R-square and 42.4%of adjusted R-square.

Table 4.5: Effect of Internal Capital requirement Assessment Process on Earnings of the Banking Sector

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.9	.86[a]	.79	.53	6.59036

a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3.9	(Constant)	-21.981	6.400		-3.435	.031
	CVAR	10.179	2.875	.914	3.540	.027
	MVAR	-5.329	1.241	-.715	-4.294	.022
	OVAR	.200	.000	1.517	3.222	.034
	SZ	-1.343E-5	.000	-1.351	-1.314	.225
	LV	-4.881	5.652	-.461	-.864	.413
	CL	-2.024E-5	.000	-1.429	-1.078	.313
	Validation of capital model	6.153	4.224	.991	1.457	.183
	TC	6.679E-5	.000	1.395	2.847	.051

	GP	4.484E-5	.000	.787	1.257	.244
a. Dependent Variable: earnings						

Source: Survey Data 2014

The results in the table 4.5 above tested the effect of internal capital requirement assessment process on the earnings of the banking sector in order to extract the most significant variables to the relationship. The results show that credit value at risk, market value at risk, operation value at risk, are the major significant variables since their significance test is equal to 5%. The results from the survey indicated that credit value at risks, operations value at risks and the accounting capital are positively related to the earnings of the bank, whereas market value at risks is negatively related the earnings. The results further showed that 79% of the variation in the earnings of the bank is caused by internal capital requirement assessment process and other variables.

Table 4.6: Effect of Internal Capital requirement Assessment Process on Liquidity of the Banking Sector

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.10	.774[a]	.699	.481	19.73937
a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL				

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3.10	(Constant)	47.811	11.102		4.306	.025
	CVAR	4.448	2.020	1.318	2.202	.054
	MVAR	2.422E-8	.000	2.140	3.503	.032

OVAR	4.506	1.120	.852	4.023	.028
SZ	-2.095E-5	.000	-.566	-.684	.513
LV	-106.223	16.930	-2.006	-6.274	.012
CL	-23.582	3.789	-1.679	-6.223	.012
TC	.000	.000	1.046	1.724	.123
GP	.000	.000	.547	1.088	.308
Validation of capital models	4.872	12.651	.210	.385	.710
a. Dependent Variable: liquidity					

Source: Survey Data 2014

Model 3.10 in the table 4.6 above tested the significance of internal capital requirement assessment process and other variables on the liquidity of the banking sector. The results show that there is a positive and strong relationship between internal capital requirement assessment process, other variables and the liquidity of the banking sector. The most contributing variable to this relationship include credit value at risk, market value at risk, operation value at risk, level of leverage, and the customer loyalty. The results from the survey revealed that there is positive relationship between credit value at risks, market value at risks, operations value at risks and the liquidity of the banking sector. The results further revealed that level of leverage and customer loyalty are negatively related to the liquidity of the banking sector.

Table 4.3: Effect of Internal Capital Requirement assessment process on Sensitivity of the Banking Sector

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
3.11	.982[a]	.965	.925	5281.45104
a. Predictors: (Constant), GP, OVAR, LV, TC, MVAR, validation of capital model, CVAR, SZ, CL				

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
3.11	(Constant)	-108254.322	16348.514		-6.622	.000
	CVAR	-.175	.026	-1.388	-6.639	.000
	MVAR	.073	.013	.467	5.674	.000
	OVAR	.280	.079	1.045	3.537	.008
	SZ	.030	.008	.908	3.710	.006
	LV	-7225.356	4529.724	-.203	-1.595	.149
	CL	-.097	.015	-2.025	-6.420	.000
	Validation of capital model	21914.334	3384.782	1.047	6.474	.000
	TC	.243	.029	1.508	8.388	.000
	GP	.334	.029	1.741	11.686	.000
a. Dependent Variable: sensitivity						

Source: Survey Data 2014

Model 3.11 in the table 4.7 tested the significance of internal capital assessment process and other variables on the sensitivity of the banking sector. The results from the survey showed that 96.5% of the variation in the sensitivity of the banking sector is caused by internal capital requirement assessment process, other variables as measured by the R-square and adjusted R-square above. The results further revealed that apart from the level of leverage, all other variables were significantly contributing of the sensitivity of the banking sector.

Conclusion

Capital is important because it is one way for banks to prevent it from being liquidated or bankrupt as it provides a buffer against insolvency. As capital is provided by shareholders, it is a

source of fund and part of shareholders' equity which is not directly dependent on the company performance. It provides a good defence against bad days for the entity. Without adequate capital, a company can be bankrupt or at the brink of collapse as demonstrated by large financial institutions during the global financial crisis in 2008. Hence, having adequate capital is important to prevent a company from bankruptcy. The results indicated a relationship between internal capital requirement assessment and performance of the banking sector. After determining the amount of capital required running the activities of the bank, then capital is allocated to different business units of the bank. The next chapter shows how private banks in Uganda allocate capital to business units.

Contribution to the New Knowledge

2G.BEV Internal Capital Management Model

The 2G.BEV stands for, going concern, gone concern, Bank Customers expected and unexpected losses and validation of capital model. This model defines internal capital requirement in terms of three components. The 2G.BEV internal capital requirement model was developed basing on theories and practice of capital management in the banking sector as indicated in chapter seven of this study

2G.BEV Internal Capital Requirement Assessment Model
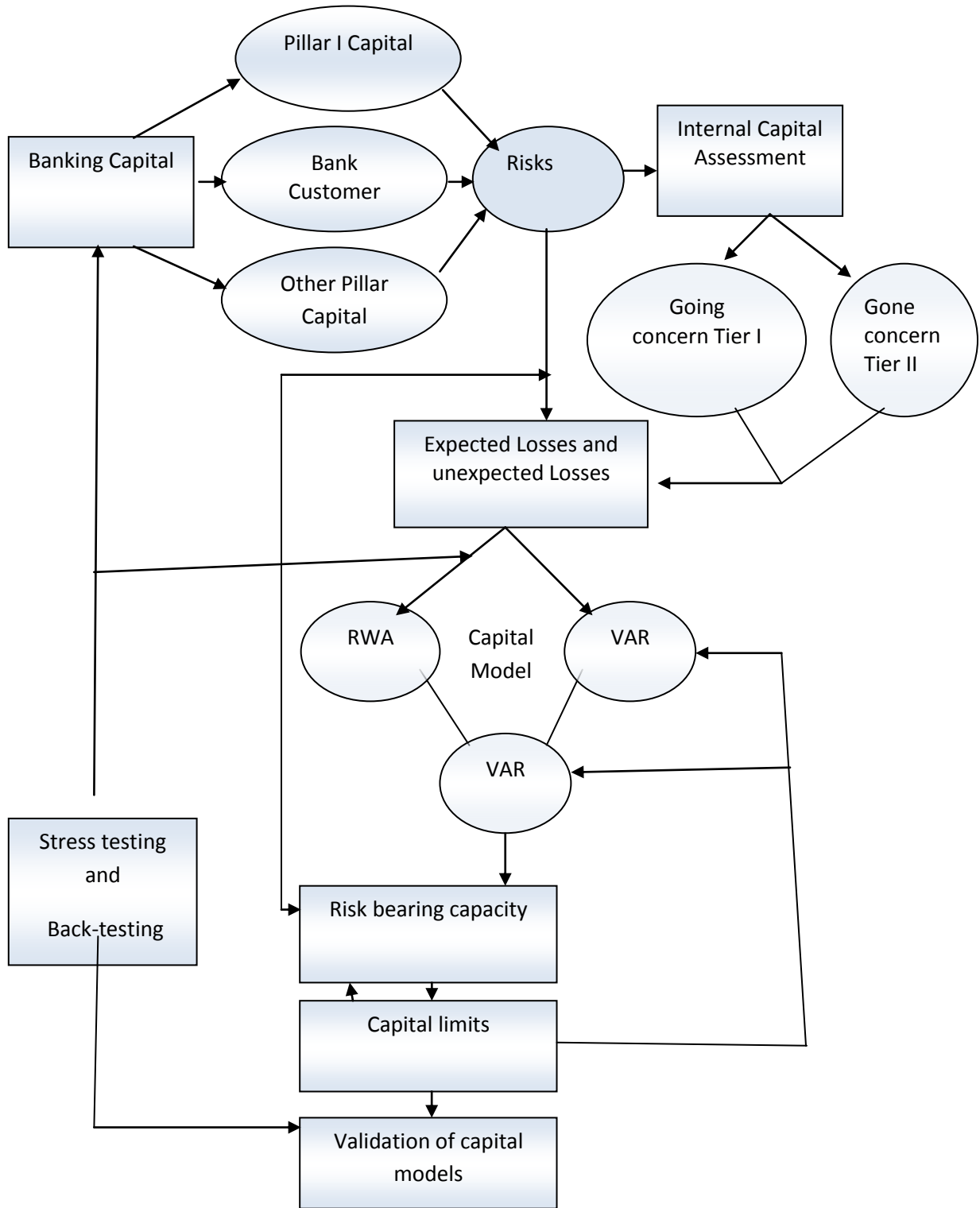
Source: Researcher 2015

Figure8.1: 2G.BEV Internal Capital Management Model

Basing on the data as presented in the tables 6.35 to 6.40 coupled with the theories from the previous findings, Internal Capital requirement Assessment (ICR) is a function (f) of going concern (GC), gone concern (NC) which are defined by the quality and quantity of accounting capital on the balance sheet (AC), the expected and unexpected losses defined by the value at risks (VaR) and bank customers (BC) and the validation of capital models (VC).

$ICR = f(AC, BC, VaR, VC)$

$ICR = \beta_0 + \beta_1 AC + \beta_2 BC + \beta_3 VaR + \beta_4 VC + \alpha$ …………………………..8.3

From the model above, Internal capital requirement can therefore be defined as *the quality and quantity of capital required by the bank under a going concern scenario to cover both expected and unexpected losses arising from its risks and bank customers*.

Notwithstanding good risk management, banks must keep capital buffers against unexpected losses. Capital limits should be set to ensure a sufficient stability to protect holders of the bank's senior debt, bank customers, and shareholders and to support on-going business also in severe times by keeping a comfort buffer over legal requirements. The bank's internal capital assessment should combine the perspectives of legal requirements, market expectations, and economic capital. In addition to regulatory capital models as defined in pillar I of Basel II, banks should develop internal models which give a more precise and risk-sensitive measure for internal capital assessment. Allocation of capital to business units should be an integral part of the regular planning process of banks. The analysis should be based upon actual and planned business volumes and risk development.

Banks should establish committee for Internal Capital Adequacy Assessment Process (ICAAP) with the purpose to assess capital requirements in relation to the bank's risk profile, and to propose a strategy for maintaining the capital levels. This process should be integrated with the bank's business planning and should be part of the internal governance framework and the internal control system. Together with continuous monitoring, and reporting of the capital adequacy to the Board, this will ensure that the relationships between shareholders' equity, economic capital, regulatory and rating-based requirements are managed in such a way that the

bank does not jeopardise the profitability of the business and the financial strength of the industry.

Banks should use both stress testing and back testing at all levels of its business, from the assessment of the risk of individual credit deals to portfolios of credit risk, market risk and operations risk, and finally in assessing the adequacy of capital and liquidity. The macroeconomic environment is a major driver of risk to the bank's earnings and financial stability. Banks should regularly perform different stress tests on group- and branch level, based on specific historical (for example 1 in 10 or 1 in 50 years) or hypothetical scenarios and based on adverse economic conditions.

Stress testing and back testing forms an important part of bank's long-term capital adequacy assessment process and is an essential input to potential earnings volatility and capital and liquidity planning.

Potential losses and the effect on available capital should be evaluated together with the effect of a scenario on the level of risk weighted assets (RWA). The stressed available capital is then compared with the RWA, under both internal and regulatory capital rules, to assess the bank's financial strength under much worse conditions than assumed in the business plan. Similarly, liquidity risk is regularly stressed to test the Bank's ability to withstand externally generated liquidity squeezes.

Reference:

- Bank of Uganda (1999): Annual Report on Financial Stability
- Bank of Uganda (2002) Annual Supervisory and Regulatory Report Issue 1
- Bank of Uganda (2005) Annual Supervisory and Regulatory Report Issue 1
- Bank of Uganda (2008) Annual Supervisory and Regulatory Report Issue 1
- Bank of Uganda (2010) Annual Report on Financial Stability
- Bank of Uganda (2012): Press Release on the Closure of National Bank of Commerce
- Basel Committee on Banking Supervision (1988): International Convergence of Capital Measurement Basel Committee on Banking Supervision Basel

- Basel Committee on Banking Supervision (1993): *Measurement of Banks' Exposure to Interest Rate Risk:* Consultative Document. Basel Committee on Banking Supervision Basel

- Basel Committee on Banking Supervision (1999): *Credit Risk Modelling: Current Practices and Applications*: Basel Committee on Banking Supervision Basel

- Basel Committee on Banking Supervision (2004): *International Convergence of Capital Measurement and Capital Standards: A Revised Framework*. Bank for Basel Committee on Banking Supervision Basel

- Basel Committee on Banking Supervision (2009): *Guidelines for Computing Capital for Incremental Risk in the Trading Book*: Bank for International Settlements.

- Berg-Yuen, P.andMedova, E. (2005): *Economic Capital Gauged*: Journal of Banking Regulation, Pp. 353-378.

- Bruce, T. P. And Pradip T. (2010): *The Impact of Capital Structure and Economic Capital and Risk Adjusted Performance*

- Caprio, G. and Klingebiel, D. (2002): In D. Klingebiel and L. Laeven (Eds): *Managing the Real and Fiscal Effects of Banking Crisis*: Discussion Paper No. 42 the World Bank, Washington D.C Pp.31-49

- Chalupka, R. and Tepl, P. (2008): *Operational Risk Management and Implications for Bank's Economic Capita*l: A Case Study.IES Working Paper 17/2008.Charles University

- Emmen, P.C.A.M. (2001): *Economic Capital Interest Rate Risk*: Internal Rabobank Document, 2001

- Goksel T. (2009): *Basel Regulations: Economic Capital and their Implication for the Turkish Banking Industry*

- Government of Uganda (2004): *Financial Institution Act*: Uganda Gazette No. 14 UPPC Printers Entebbe

- Government of Uganda (2005: 50-152) *Capital Regulation Act*

- Habyarimana, J. (2003): *The Benefit of Banking Relationship Evidence from Uganda*: Harvard University.

- Kakuru, J. (2008): *The Supply Demand Factors Interface and Credit Flow to Small and Medium Enterprises in Uganda*: Ph.D Thesis

- Kjersti-Gro, L. (2003): *Bank's Buffer Capital: How Important is Risk*. Norge Bank Working Paper

- KPMG (2009): Managing Economic Capital Beyond Basel II. KPMG

- KPMG (2011): Basel III Issues and Implication. KPMG

- Matama, R. (2008): *Corporate Governance and Financial Performance of Selected Commercial Banks in Uganda*: Makerere University Business School.

- Matten, C. (2001): *Managing Banking Capital, Capital Allocation and Performance Measuremen*t: Wiley New York.

- Merton. R.C. (1993): *Operation and Regulation in Financial Intermediation*: A Functional Perspective in Operation and Regulation of Financial Markets, Edited By P. Englund.

- Mugenda, A.G. (2008): *Social Science Research Theory and Principles*: Arts Press

- Ngo, P. T. (2008): *Capital-Risk Decisions and Profitability in Banking*: Regulatory Versus Economic

- Piergiorgio, A. and Mathias, D. (2010): *An Economic Capital Model Integrating Credit and Interest Risk in the Banking Book*: Bank of England Working Paper

- Rime, B (2001):*Capital Requirements and Bank Behaviour*: Empirical Evidence for Switzerland', Journal of Banking and Finance, 25(4), Pp. 789-805.

- Saunders, L.M.K., Philip, L. And Thornhill, A. (1999): *Research Methods for Business Students:* 2nd Edition Pearson Publishers

- Yellen, J L (2010): *Macro prudential Supervision and Monetary Policy in the Post-Crisis*

Appendices

Bank Performance

CQ	AQ	ME	E	L	S
415.9582	0.146481	24.85402	-7.20964	90.82084	44502
81.55547	5.525265	-14.2631	-2.43944	66.28712	-4972.58
112.0576	2.197797	21.12132	31.13107	84.74869	252.45
-120.733	0.159693	21.41708	-32.0231	74.28995	-2833.75
228.3522	0.612491	24.06612	50.86289	66.16423	2764.5
479.7151	5.276052	62.61915	-1.19829	86.28607	725.75
321.8778	2.579834	4.934873	-114.284	57.43573	4001.16
465.8939	0.939526	36.89554	-39.7236	70.95445	-1119.75
133.6205	5.688353	33.11629	16.8514	75.00733	40586.5
235.613	2.54352	27.42917	75.60727	77.88838	17986.25
267.9295	12.19053	17.50912	-9.83605	66.48521	3490.75
444.1852	5.474852	110.0447	-59.6673	69.38977	2752.975
60.67234	5.539817	21.02297	30.59849	96.57958	336.125
13.50701	2.881121	13.32929	13.8514	17.50912	3490.75
10.65476	4.418288	26.77005	85.60727	24.06612	2764.5
51.90631	3.078724	21.99164	-5.83605	24.85402	44502
17.42762	4.505022	20.53434	-48.6673	27.42917	22986.25
75.41336	6.698695	22.72202	28.59849	33.11629	280586.5

CVAR	MVAR	OVAR	SZ	CL	LV	TC	GP
197326.3	461085.6	104550.5	842305.3	484720.5	0.747866	104338.3	47059.56
-4577.47	-59128.5	13410.5	112259.5	79064	0.903687	10564	5357.92
10093.01	402.9698	11599.25	73475.75	59419.5	0.859988	10287	4456.94
-55807.9	-11278.5	39118	381192	318833.5	0.908681	34811	6392.06
54549.13	-24155.8	91127	538019.5	385071	0.815015	98774.75	20211.34
1373.2	42570.67	1404.25	20087.75	16745.75	0.896902	1809.75	667.02

32594.99	10764.09	10856.8	215037.8	152320.3	0.611021	48942.5	11955.88
641208.9	239079.8	276492.5	2523122	1804397	0.065307	284458.5	133538.1
39448.56	-54340.9	163261.3	861175.3	631281	2.599705	174196.8	47722.14
220044.2	16738.11	132466	864096.8	581392.3	0.795024	141921	48453.32
86888.65	61877.98	67400.75	397475.5	309485.8	1.816905	65404.5	25056.56
95284.92	34027.89	51987.25	214952	156870.8	0.85324	39919	16851.76
123540.5	-164.787	38149.25	249757.3	175526.5	0.730508	208954.8	13518.94
39448.56	-54340.9	5198.151	861175.3	365820.8	0.615999	258400	13767.04
220044.2	16738.11	49039.58	864096.8	15870.36	0.963561	18952	21402.24
86888.65	61877.98	4739.22	397475.5	215543.5	0.657923	223650	33312.4
95284.92	34027.89	-560.188	214952	479865.3	0.397695	12580	435844
123540.5	-164.787	23197.18	249757.3	397852.7	0.797375	426005	33136.4