

FN211 Financial Markets Commercial Banks

18 November 2017

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Why we need to study about a commercial bank?

1 It definitely involves with your every day's life

2 What is a commercial bank's business model?

3 How to measure performance of a commercial bank?

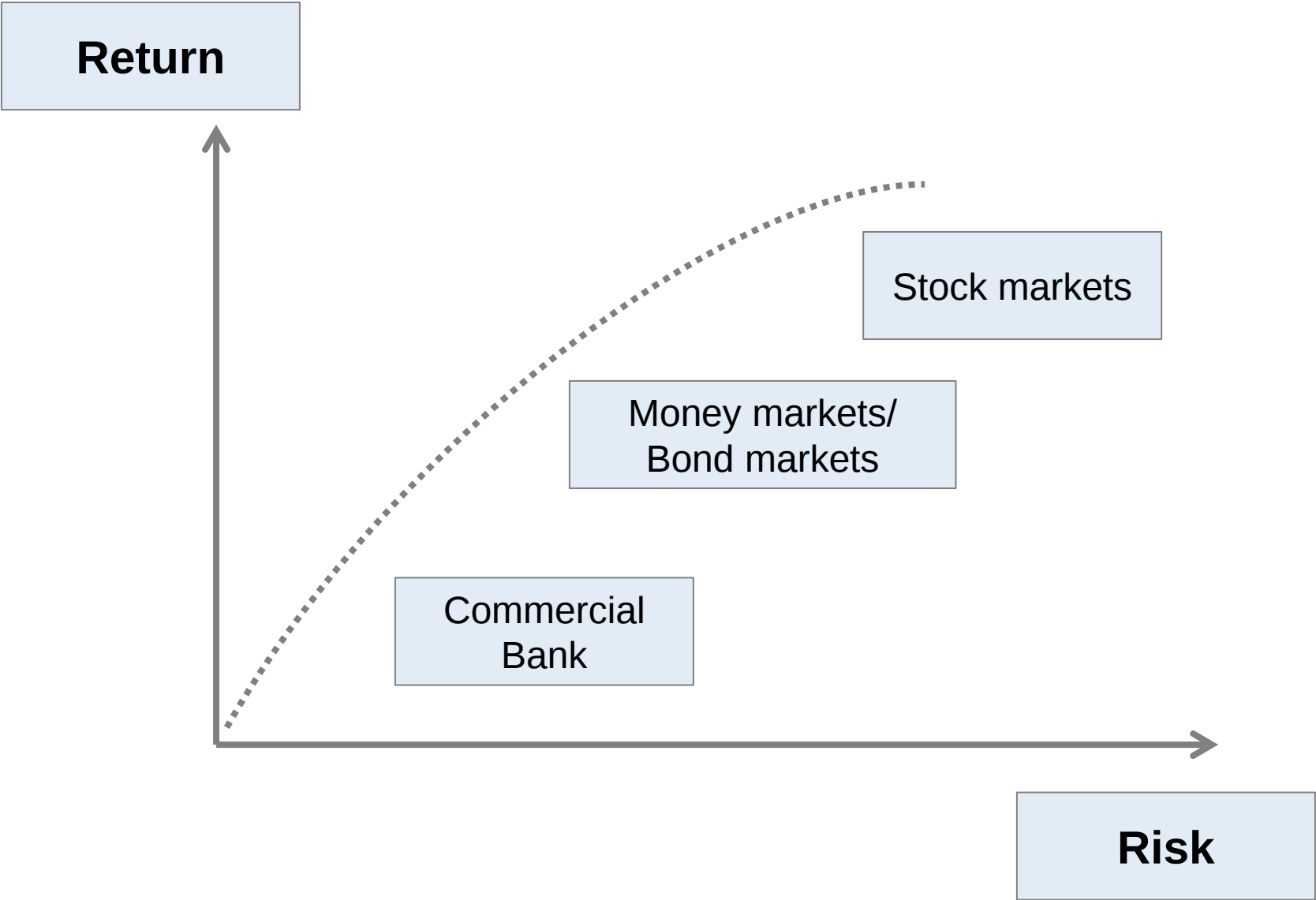
4 Information for your future job?



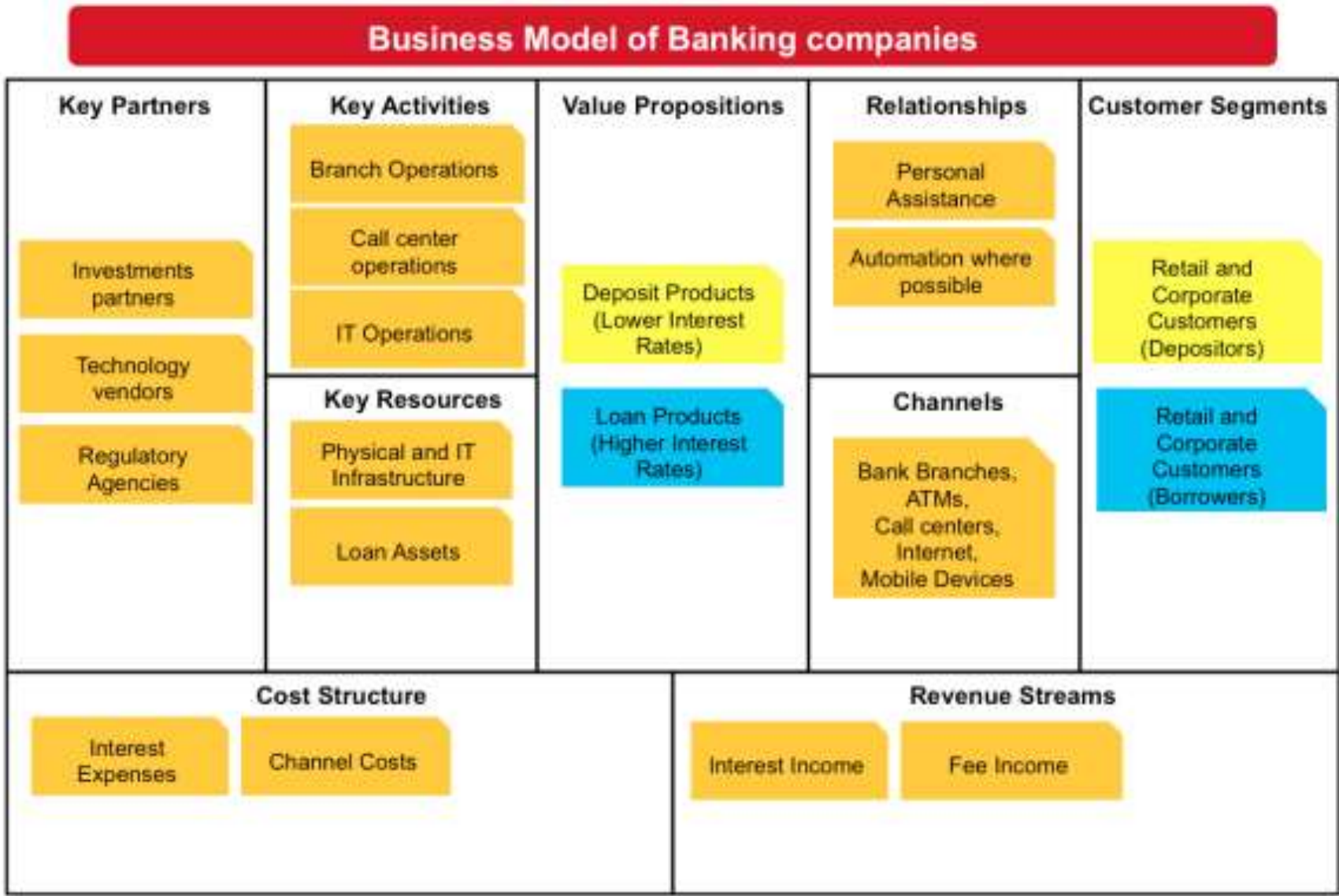
Contents

- Overview
- Balance Sheet
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- How to Measure Bank's Performance
- Deposit Insurance Scheme

Overview: Risk & Return



Business Model of Banking companies



I start my small bank

Cash \$1,000,000

Loans
 \$9,000,000
(8% interest rate)



\$1,000,000

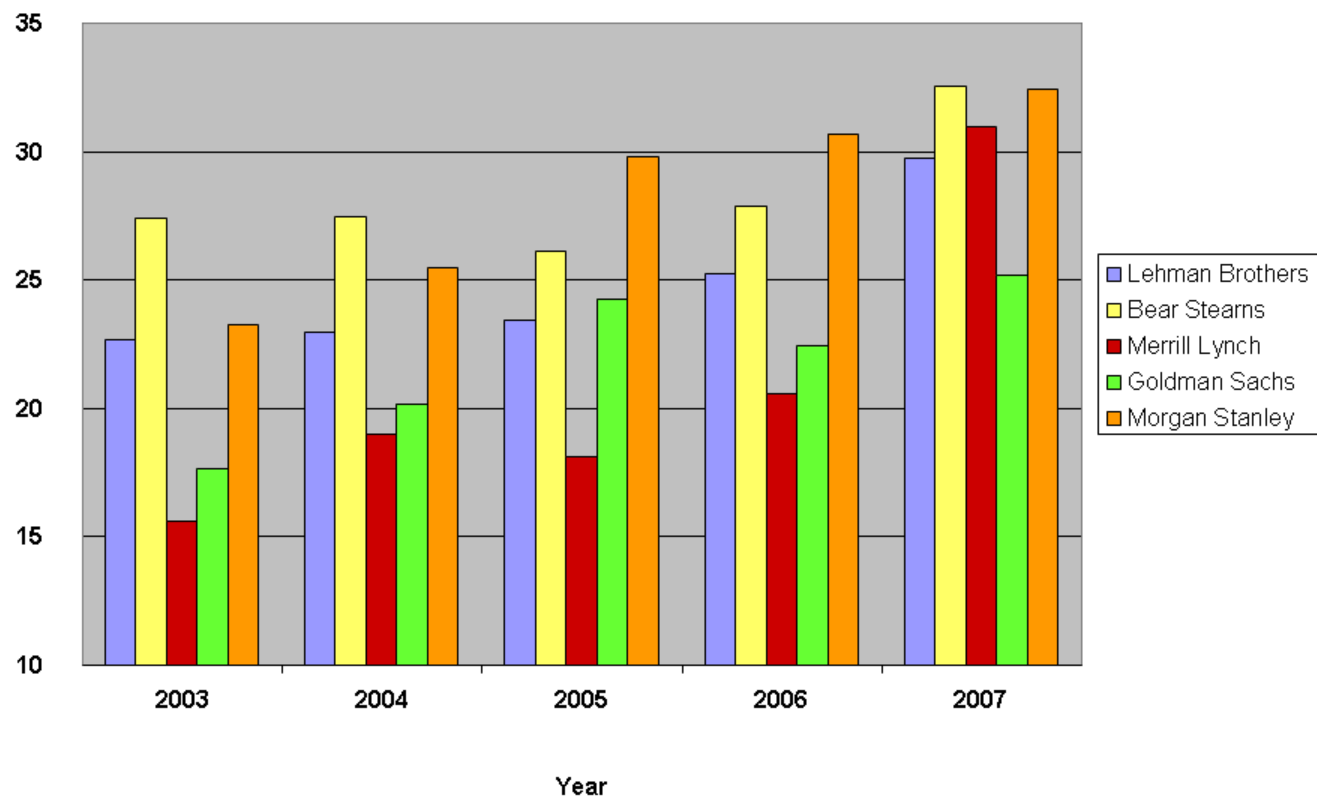
Deposits \$10,000,000
(3% interest rate)

My equity \$1,000,000

When banks are overleveraged ...

Leverage Ratios For Major Investment Banks

The leverage ratio is a measure of the risk taken by a firm; a higher ratio indicates more risk. It is calculated as total debt divided by stockholders equity. Each firm's ratio increased between 2003-2007.



Source Data: Company Annual Reports (SEC Form 10K)



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Balance Sheets and Recent Trends

Assets

- Cash
- Investments
- Loans
- Other assets

Liabilities

- Deposits
- Borrowings

Equity

Balance Sheets and Recent Trends

Balance Sheet of Thai Commercial Banks as of Dec 2011		
	Million Baht	%
Cash	233,908	1.80%
Due from Financial Institutions and Money Market	1,589,804	12.25%
Investments in Securities (Net)	1,900,741	14.64%
Credits (Net)	8,199,592	63.16%
Premises and Equipment (Net)	170,977	1.32%
Other Assets (Net)	886,715	6.83%
Total Assets	12,981,737	100.00%
Deposits	7,864,597	60.58%
Due to Financial Institutions and Money Market	716,545	5.52%
Borrowings	2,004,532	15.44%
Other Liabilities	805,420	6.20%
Stockholders' Equity	1,590,643	12.25%
Total Liabilities and Equities	12,981,737	100.00%

Balance Sheets and Recent Trends

Assets

Primary reserves consist of cash and deposits held with other banks.

- These reserves are the banker's first line of defense against withdrawals by depositors and customer demand for loans.
- Banks generally hold no more cash than is absolutely required to meet short-term contingencies, however, because the yield on cash assets is minimal.

Balance Sheets and Recent Trends

Assets

Secondary reserves consist of investments in (mostly) short-term government securities.

- Commercial banks hold securities acquired in the open market as a long-term investment and as a secondary reserve to help meet short-term cash needs.
- Banks generally favor short-term government securities (T-bills, BOT bonds and short-term government bonds) because these securities can be marketed readily to cover short-term cash needs and are free of default risk.

Balance Sheets and Recent Trends

Assets Loans

- Banks make loans of reserves to other banks through the interbank market (e.g. at BIBOR rate) and to central bank through repurchase agreement (*securities purchased under reverse repo/resale agreements*).
- However, the principal business of commercial banks is to make loans to qualified borrowers. These loans arise from negotiation between the bank and its customer and result in a written agreement designed to meet the specific credit needs of both parties.
- Loans are among the **highest yielding assets** a bank can add to its portfolio, and they often provide the largest portion of traditional banks' operating revenue.

Balance Sheets and Recent Trends

Assets

Loans can be in many forms...

- Short-term loans to businesses to support purchase of inventory
- Long-term loans to businesses to finance purchase of buildings, machinery, equipment, construction of residential and commercial structures, etc.
- Loans to individuals to finance the purchase of residential properties, automobiles, education, etc.

Balance Sheets and Recent Trends

Liabilities

Deposits are primary sources of funding. There are 3 main types of deposits.

- **Demand or checking deposits** are means of making payments because they are safer than cash and are widely accepted.
- **Savings deposits** bear relatively low interest rate (*0.75% at the moment*) but may be withdrawn conveniently through ATM machines by the depositor with no notice.
- **Time deposits** carry a fixed maturity (3-, 6-, or 12-month) and usually offer higher interest rates (*1.00-3.00% at the moment*).

Balance Sheets and Recent Trends

Liabilities

Non-deposits funds or borrowings include

- **Borrowing from other banks** in the interbank market and **from the central bank** through repurchase agreement (*securities sold under repurchase agreements*)
 - **Issuance of Subordinated Bonds** or **Bill of Exchange (B/E)**
 - **Issuance of Hybrid Bonds** which are bonds that pay coupon interest but can be classified as 'Tier I' or 'Tier II' capital for the purpose of meeting the capital adequacy requirements.
- *Examples are Stapled Limited Interest Preferred Securities (SLIPS), and Capital Augmented Preferred Securities (CAPS), issued by Thai commercial banks after the Financial Crisis of 1997.*

Balance Sheets and Recent Trends

Stockholders' Equity

- Very small portion, meaning banks are highly leveraged (a relatively small amount of loan defaults can wipe out equity, leaving it insolvent)
- Regulators require banks to hold a minimum level of equity to act as a buffer

Balance Sheets and Recent Trends

Off-Balance-Sheet activities are not recorded on a bank's balance sheet and using up little of no bank capital but help banks provide services to their customers and **earn fee income**.

Off-balance-sheet asset - when an event occurs, this item moves onto the asset side of the balance sheet or income is realized on the income statement

Off-balance-sheet liability - when an event occurs, this item moves onto the liability side of the balance sheet or an expense is realized on the income statement

Balance Sheets and Recent Trends

Off-Balance-Sheet activities: Examples

Issue standby letters of credit (LC) on behalf of their customers who borrow from another lender. LCs contain the bank's pledge to pay or guarantee if its customer cannot pay the third party.

Securitized assets which have included packages of auto, credit-card, and home mortgage loans. These packaged loans generate interest and principal payments which are passed through to investors who purchased the securities backed by these loans.

Balance Sheets and Recent Trends

Sources of Income

Interest Spread – is the difference between interest earned on loans and interest paid for deposits

- MLR = 6.25%, 1-year Deposit Rate = 0.75%, Gross spread is 5.50%

Investment Income – profit from trading or investing in bonds, stocks, and money market securities, normally ‘non-recurring’

Fee Income – from services such as issuing letters of credits, money transfer, foreign exchange, issuing new ATM card or credit cards, custodian (or trustee)

Analyzing a bank

2 risks concerning a commercial banks...

- **Interest rate risk** is the management of the spread between interest paid on deposits and received on loans over time.
- **Credit risk** is the likelihood that a borrower will default on a loan or lease, causing the bank to lose any potential interest earned as well as the principal that was loaned to the borrower.

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Impact of Rising Interest Rates

Economic Surplus can be defined as

$$MV_{\text{assets}} - MV_{\text{liabilities}}$$

A bank with longer asset duration relative to the duration of its liabilities will experience a decline in its economic surplus if interest rate **rises**, because the longer duration of the assets will cause their market value to fall more than the market value of the liabilities fall.

Impact of Rising Interest Rates

Example: Assume that Primo Bank has a balance sheet with the market value of its asset portfolio equal to \$50 billion and the present value of its liabilities equal to \$40 billion. Calculate Primo's economic surplus.

$$\begin{aligned}\text{Economic surplus} &= MV_{\text{assets}} - MV_{\text{liabilities}} \\ &= 50 - 40 \\ &= 10 \text{ billion}\end{aligned}$$

Impact of Rising Interest Rates

Example: Now assume

Interest rates rise by 100 basis points.

Modified Duration of Primo's assets is 5.0

Convexity of Primo's assets is 22.5

Modified Duration of Primo's liabilities is 3.0

Convexity of Primo's liabilities is 45

Calculate Primo's economic surplus after the interest rate change.

Impact of Rising Interest Rates

Answer:

$$\% \text{ change} = (-)(MD)(\Delta y) + (\text{convexity}) (\Delta y)^2$$

$$\text{For assets:} = (-)(5)(0.01) + (22.5)(0.01)^2 = -4.775\%$$

$$\text{For liabilities} = (-)(3)(0.01) + (45)(0.01)^2 = -2.55\%$$

$$\text{Asset value} = 50,000(1-0.04775) = 47,612.5 \text{ million}$$

$$\text{Liabilities value} = 40,000(1-0.0255) = \underline{-38,980} \text{ million}$$

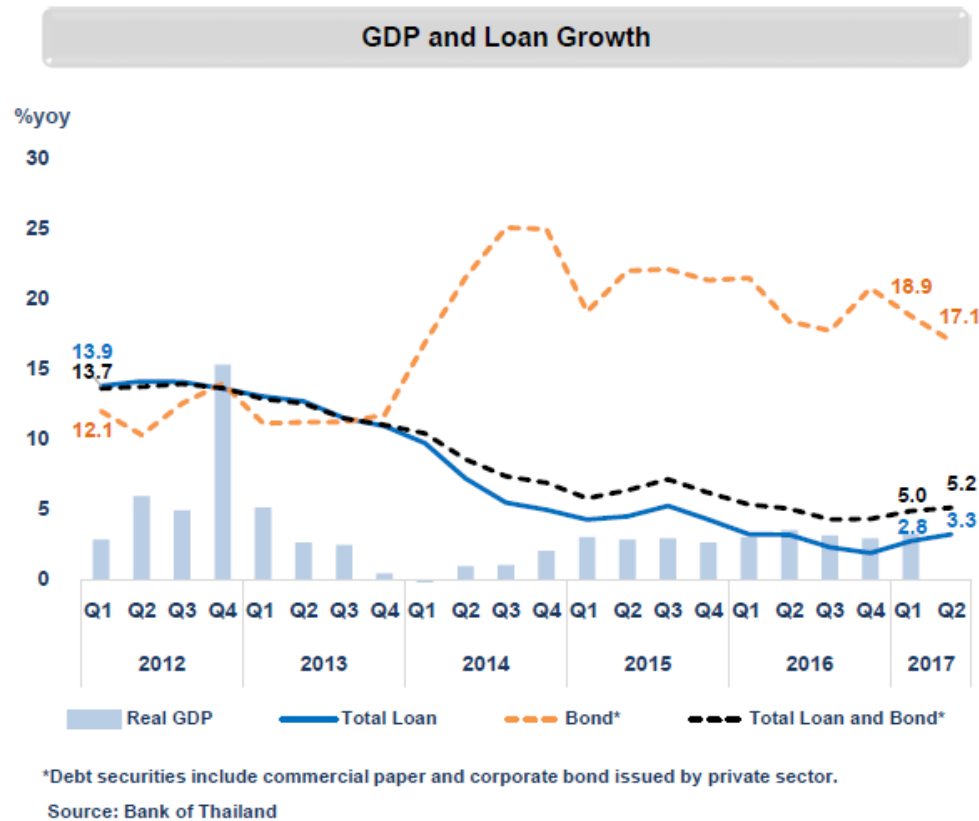
$$\text{Economic surplus} = 8,632.5 \text{ million}$$

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Bank Loan Growth

Bank loans and financing through debt securities expanded in line with continued economic expansion.



- Loan growth increased to a level comparable to GDP growth.
- Loan quality deteriorated: NPL increased mostly from few large corporates, NPLs to total loan of 2.95% comparing to 2.94% last quarter.

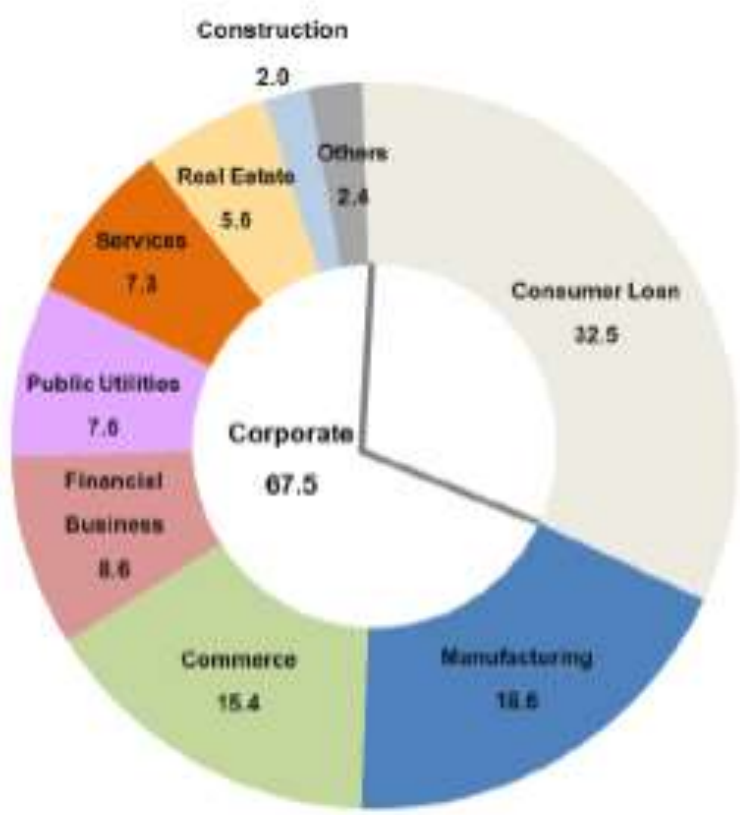
Commercial Bank Loan Growth

Commercial Bank Loan Growth



- Loans to large corporate expanded.
- Loans to SME expanded
- Consumer loan remained stable

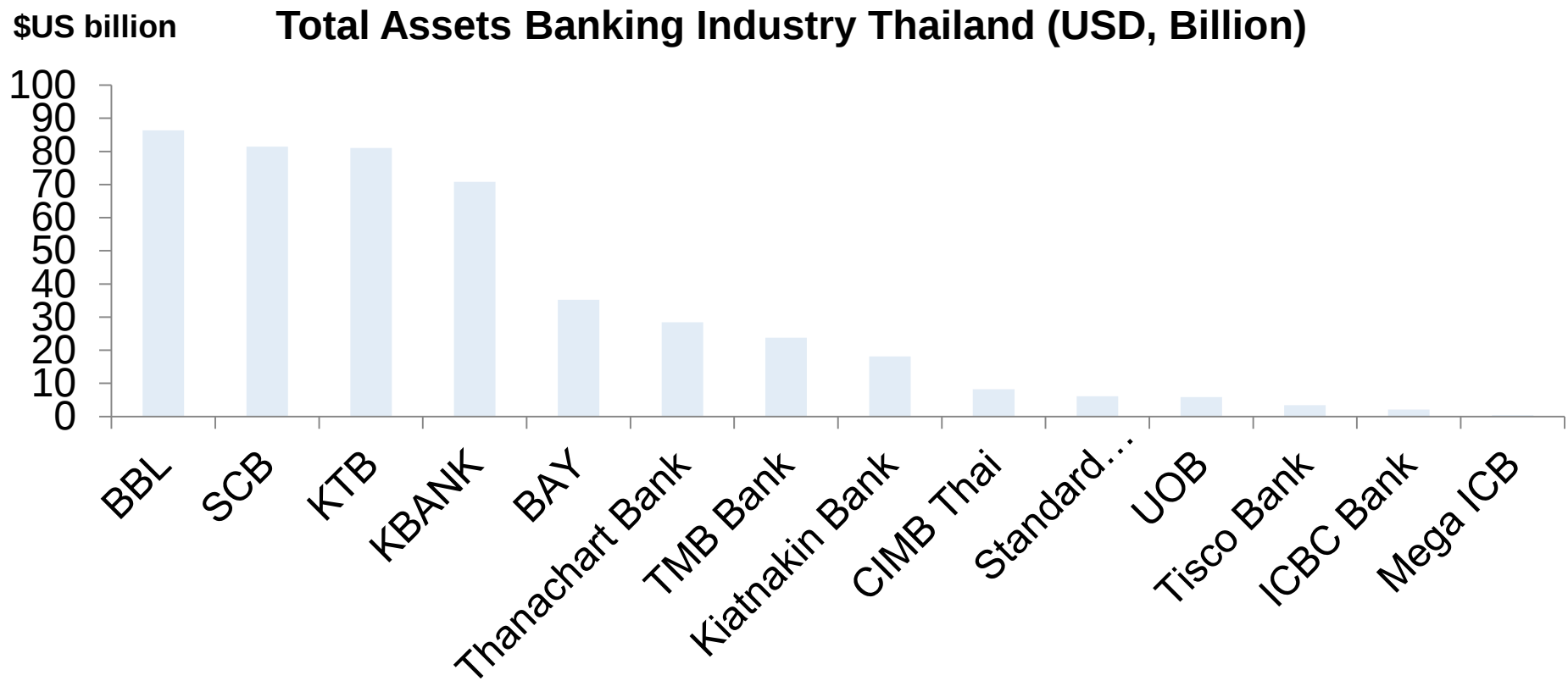
Structure of Corporate loans as of June 2017 (% to total loan)



Loan Loss Provision

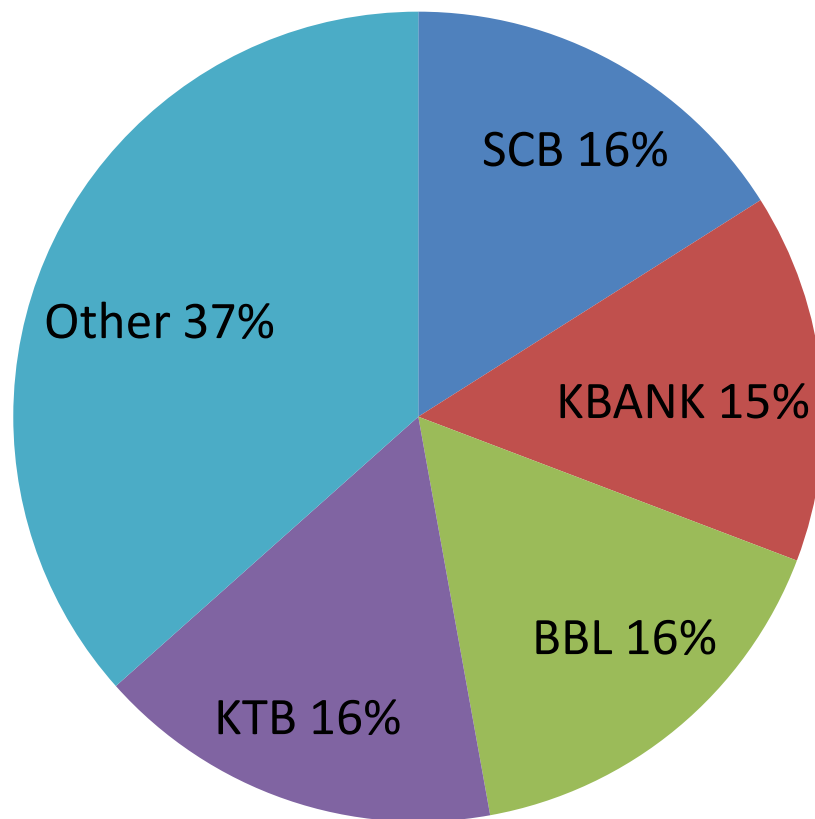


The Banking Industry



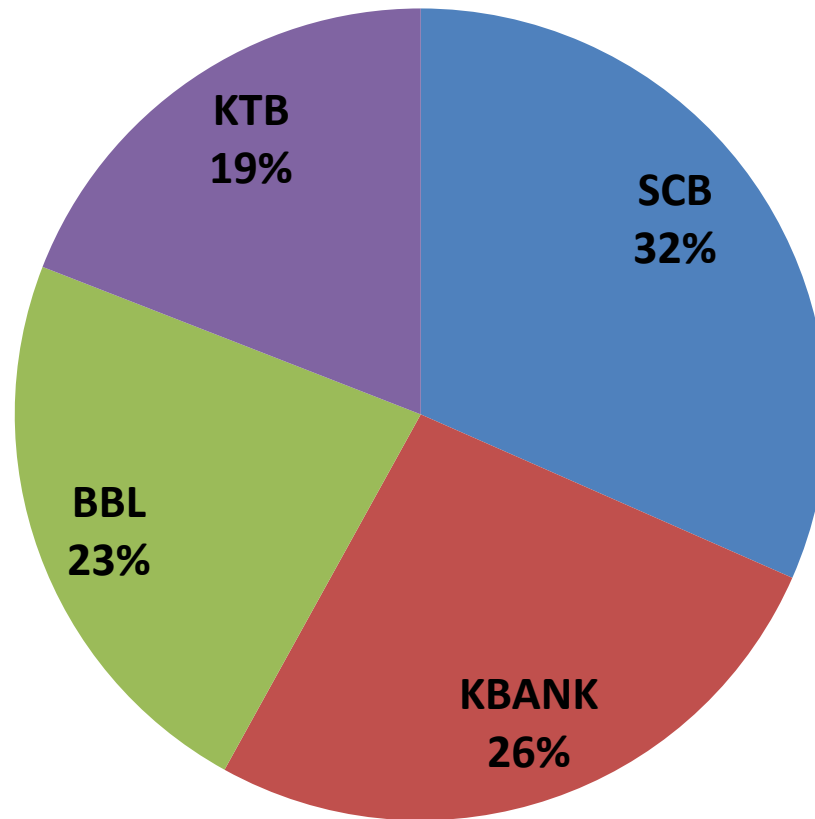
The Banking Industry

Banking Industry Thailand
Market share by asset size, as of December 2016



The Banking Industry

**Market share of Thai Banks by net profit,
as of December 2016**



The Banking Industry

Current Trends

Branchless and online banking

Robotic process automation

Fee-based Income – banks are now selling insurance, mutual funds, personal loans, credit cards, money transfer, payment services, etc.

Private Banking and Wealth Management – providing complete and customized services for high net worth individuals, with assets of at least 3 million baht. It is estimated that there are 160,000 of them in Thailand.

Loans for SMEs – given matured lending business for large companies, banks are going after SME sector with higher yield and more room to grow.



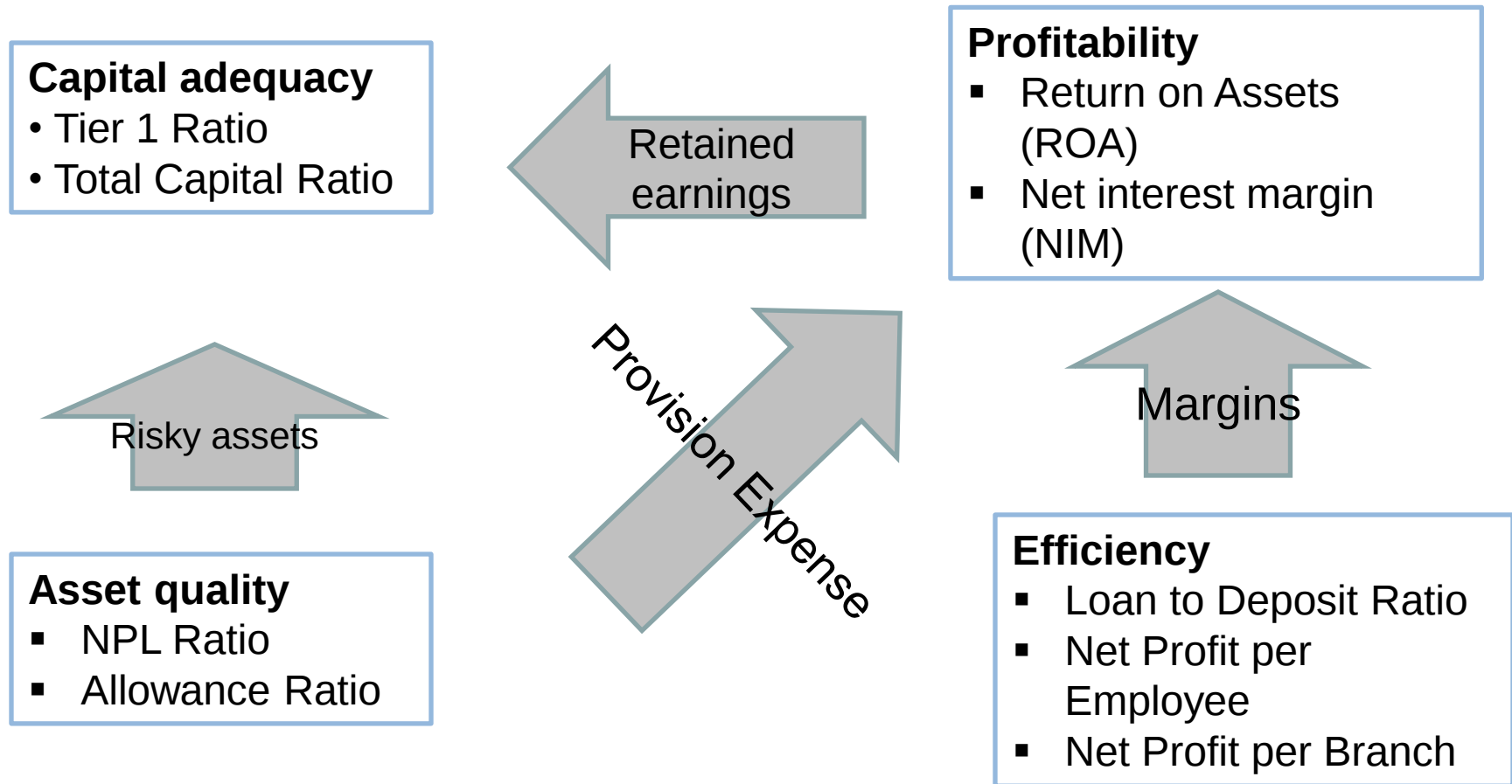
Bitcoin



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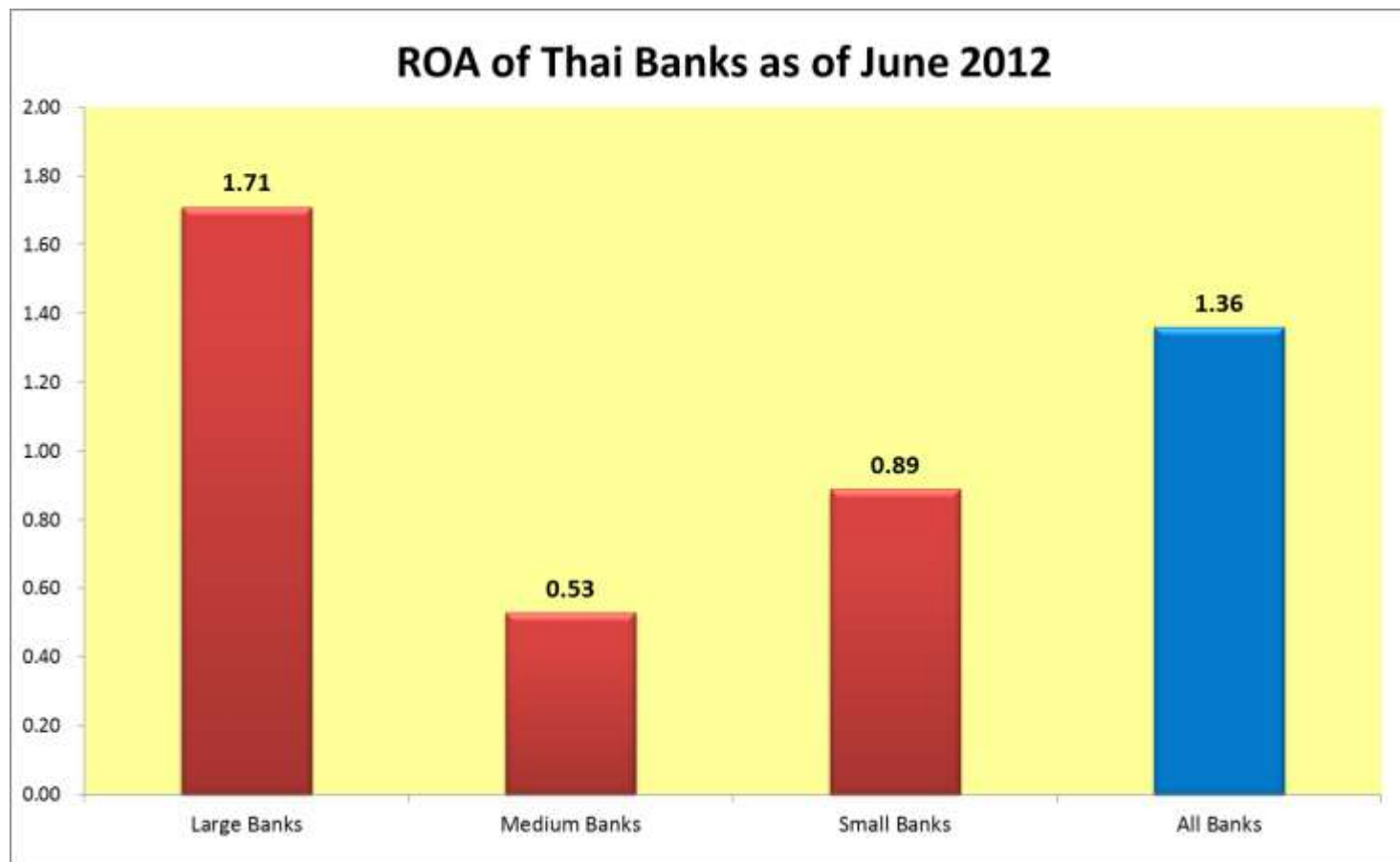
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How to measure bank's performance



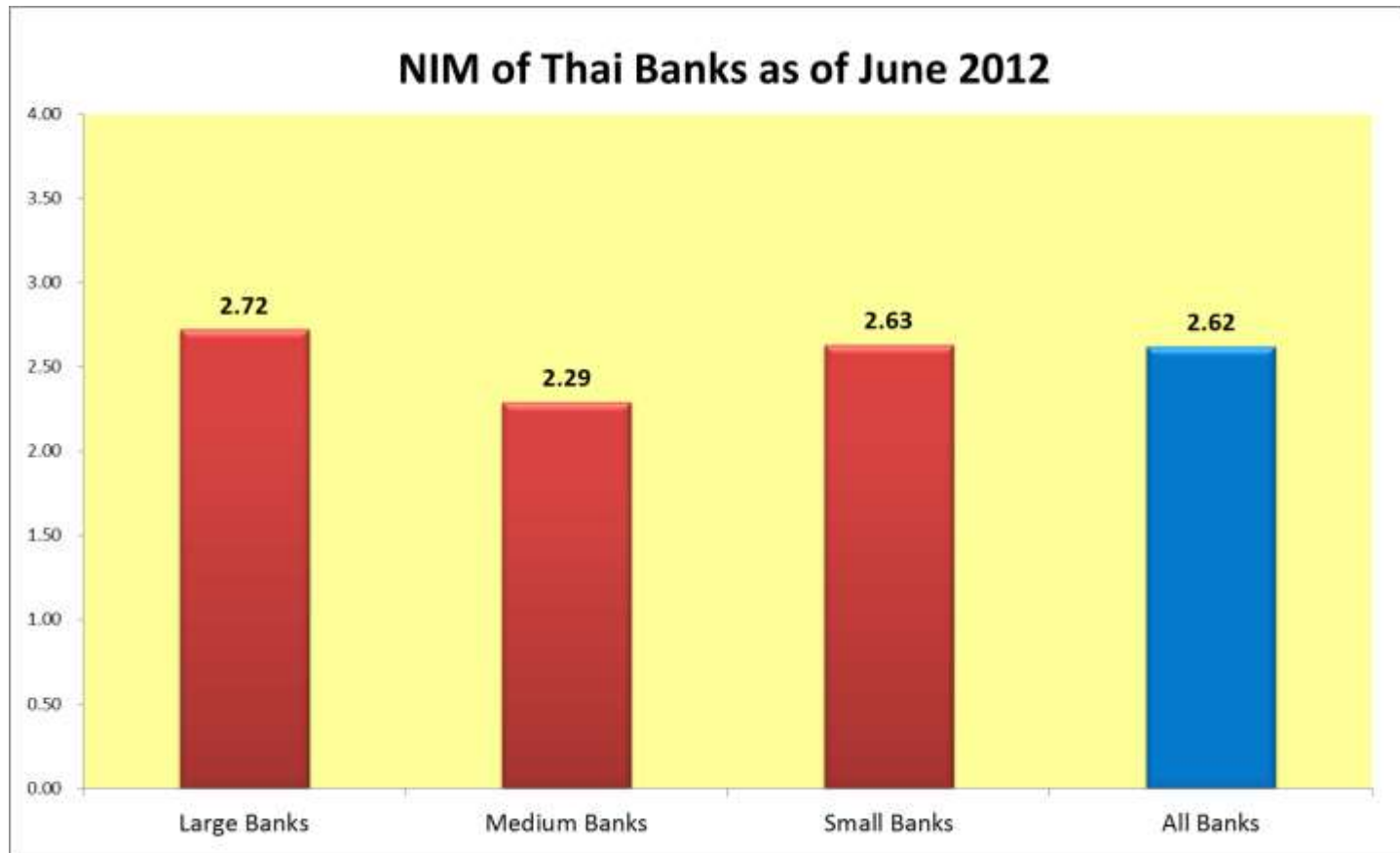
1. Profitability

$$\text{Return on Assets (ROA)} = \frac{\text{Net Profit}}{\text{Average Net Assets}}$$



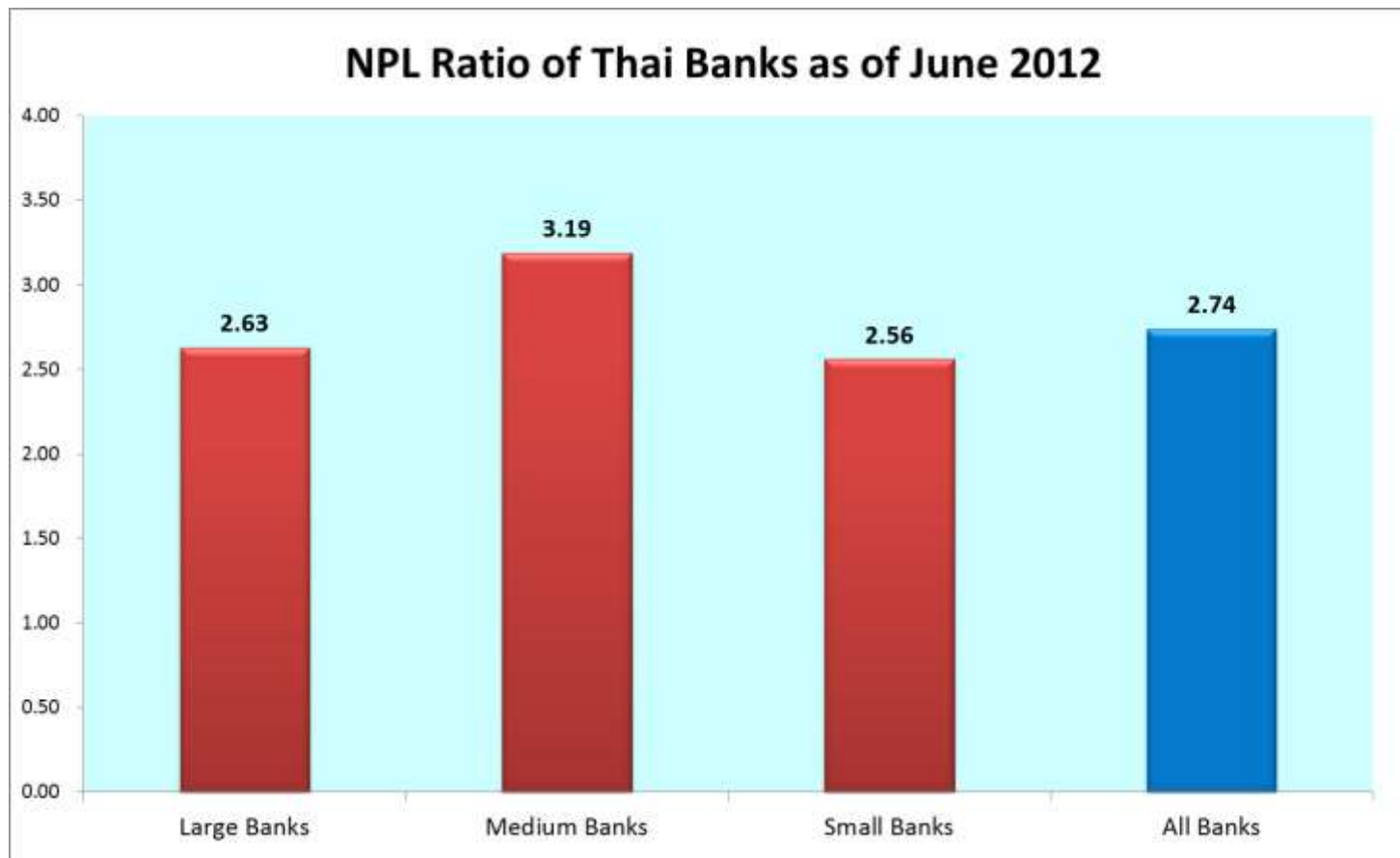
1. Profitability

$$\text{Net Interest Margin (NIM)} = \frac{\text{Interest Income} - \text{Interest Expense}}{\text{Average Net Assets}}$$



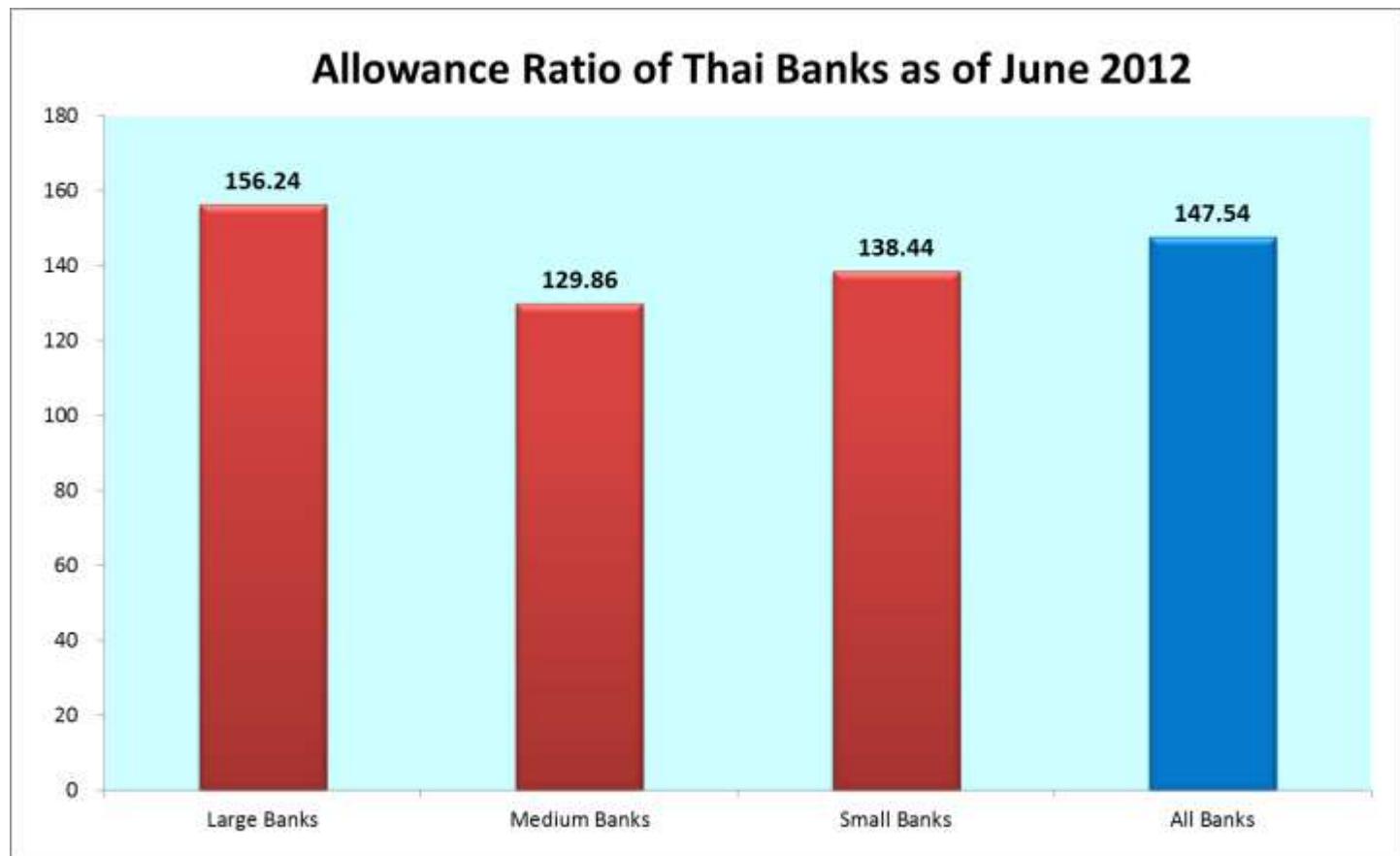
2. Asset Quality

$$\text{NPL Ratio} = \frac{\text{Non - performing Loans (NPL)}}{\text{Total Loans}}$$



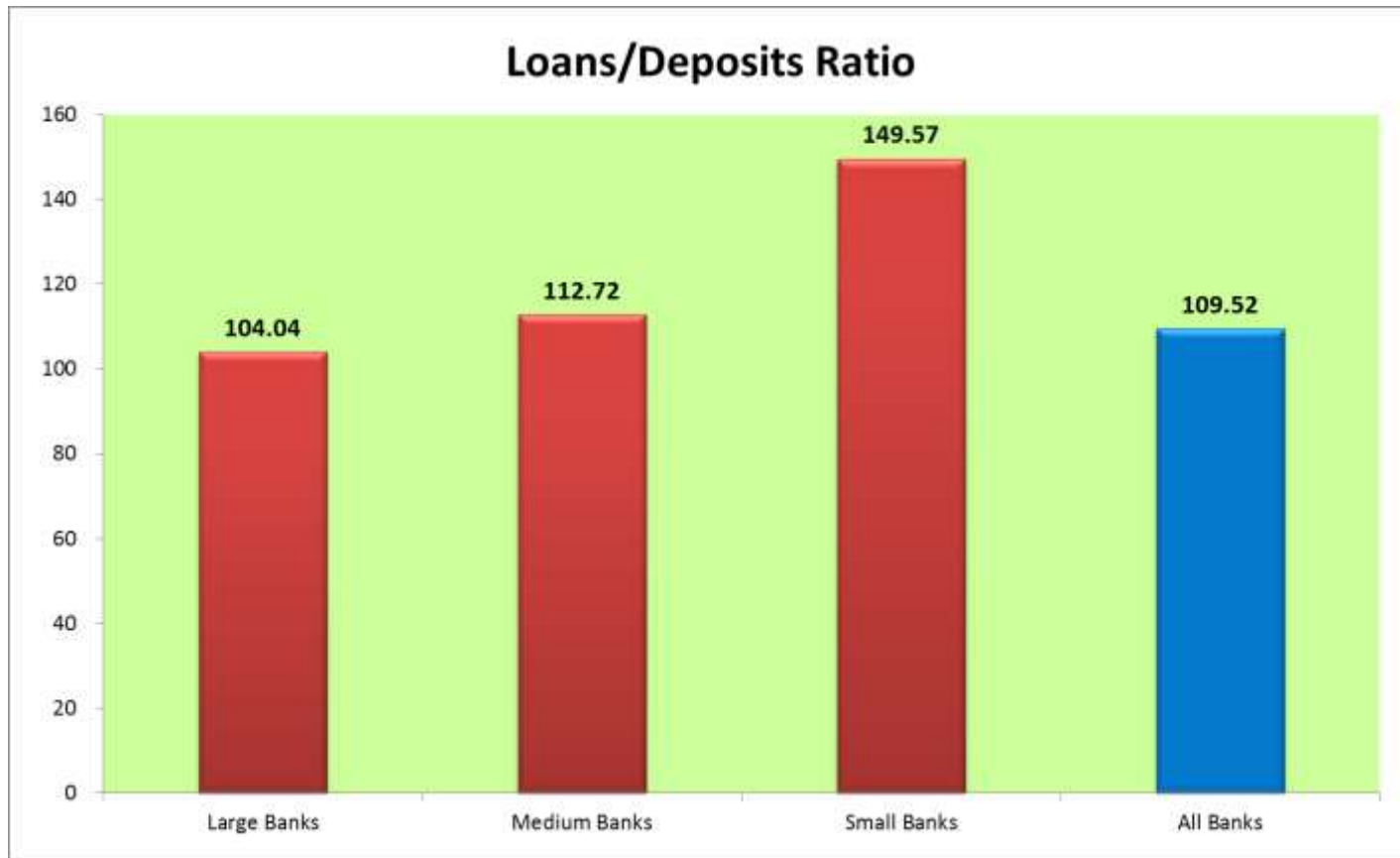
2. Asset Quality

$$\text{Allowance Ratio} = \frac{\text{Actual Allowance}}{\text{Required Allowance}}$$



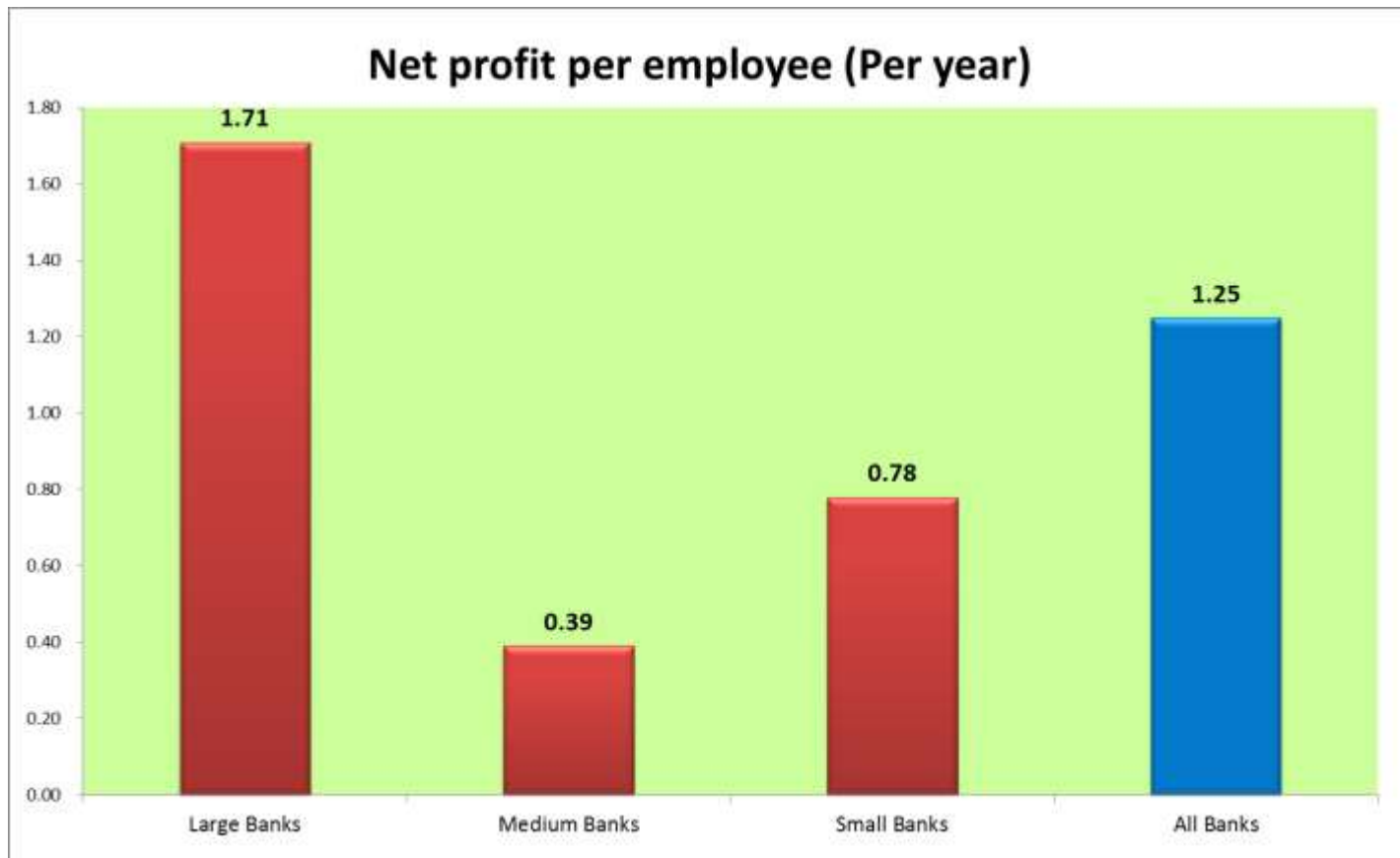
3. Efficiency

$$\text{Loans/Deposits Ratio} = \frac{\text{Loans}}{\text{Deposits}}$$



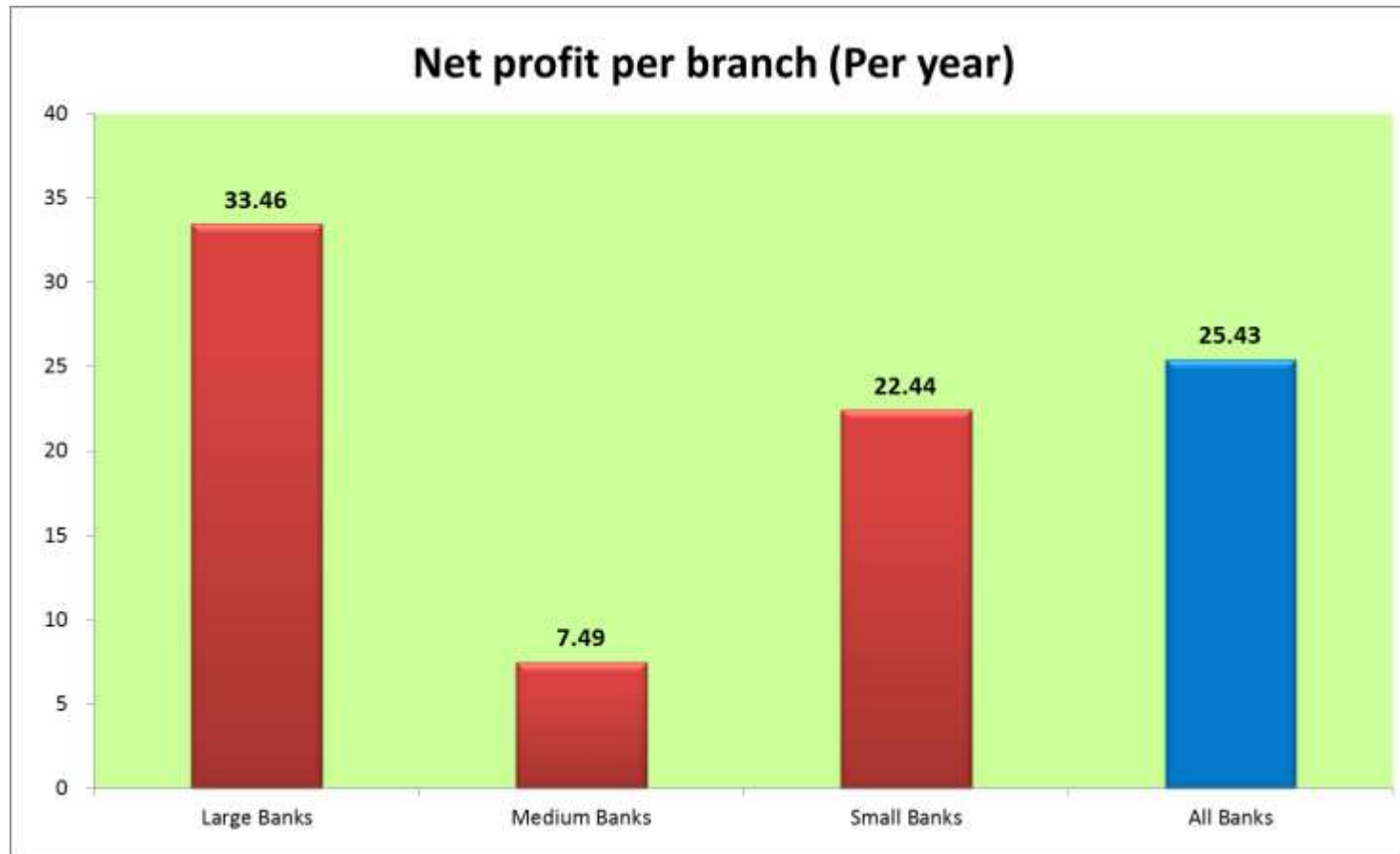
3. Efficiency

$$\text{Net Profit/Emp loyee} = \frac{\text{Net Profit}}{\text{No. of Employees}} .$$



3. Efficiency

$$\text{Net Profit/Branch} = \frac{\text{Net Profit}}{\text{No. of Branches}}$$



4. Capital Adequacy

$$\text{Tier1 Ratio} = \frac{\text{Tier 1}}{\text{Risk Adjusted Assets}} \geq 4.25\%^*$$

$$\text{Total Capital Ratio} = \frac{\text{Total Capital (Tier 1 + Tier 2)}}{\text{Risk Adjusted Assets}} \geq 8.50\%^*$$

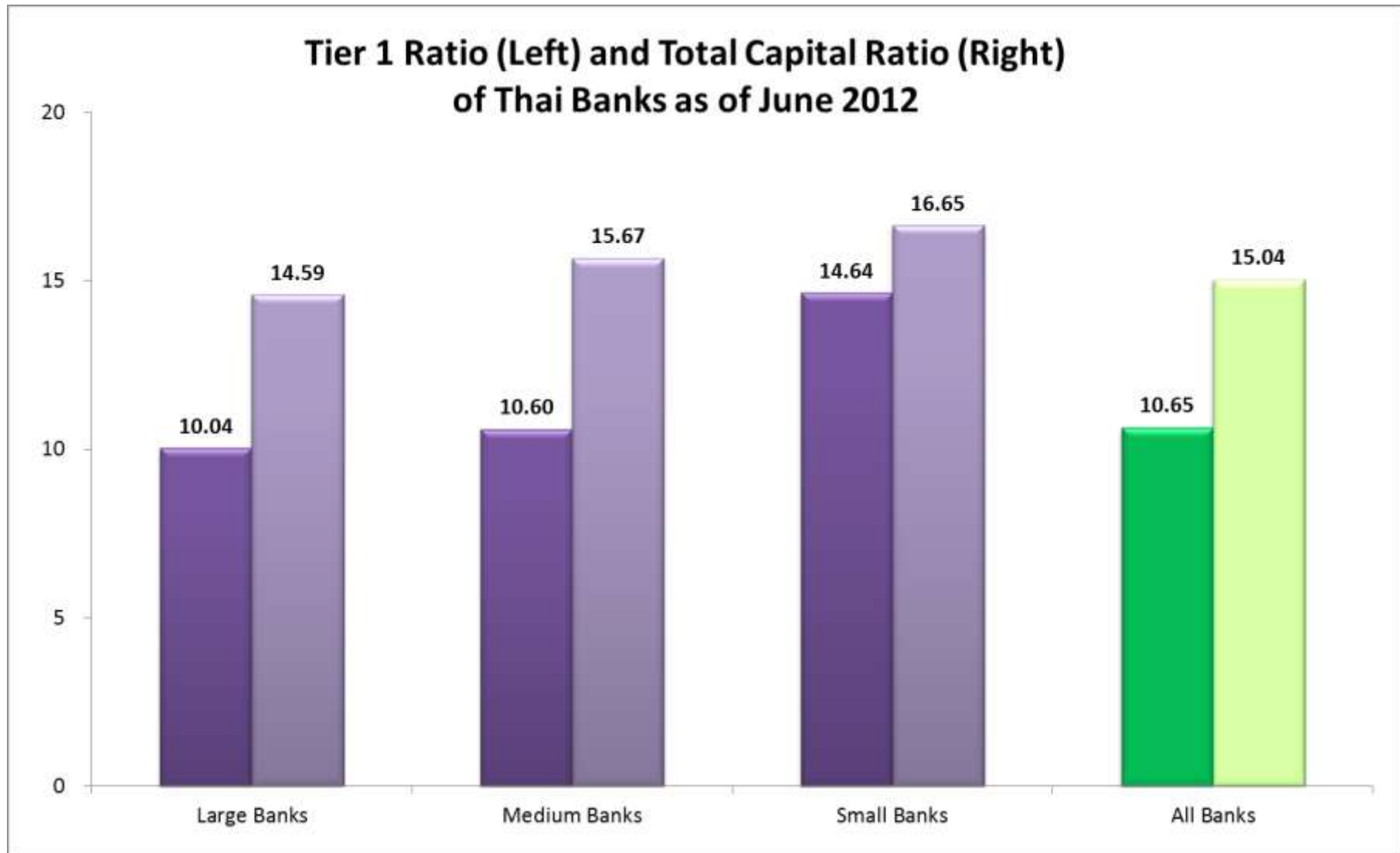
Tier 1 - core capital, mainly stockholders' equity, hybrid instruments (SLIPS, CAPS)

Tier 2 – subordinated debt, allowance for loan loss

Risk-adjusted Assets – On- and off-balance-sheet assets whose value is adjusted for credit risk

**Minimum requirement set by the Bank of Thailand, according to the standards of the Bank for International Settlement (BIS)*

4. Capital Adequacy



How to measure bank's performance



What is 'Bank Run'?

- A bank run occurs when a large number of bank customers withdraw their deposits because they believe the bank is, or might become, insolvent.
- As a bank run progresses, it generates its own momentum, in a kind of self-fulfilling prophecy; as more people withdraw their deposits, the likelihood of default increases, and this encourages further withdrawals.
- Several techniques can help to prevent bank runs.
 - temporary suspension of withdrawals
 - central banks act as a lender of last resort
 - the protection of deposit insurance systems

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Deposit Insurance Scheme

- **Previous System: Blanket Deposit Guarantee**
- Bank deposits are guaranteed by the Thai Government.
- Each bank pays a fixed rate of 0.40% of total deposits for 'deposit insurance premium', regardless of its credit risk.

Why is this system a flaw?

- The system led to a market distortion where weak banks and strong banks pay equal insurance premium, and therefore offer the same deposit rates.

Deposit Insurance Scheme



- **New System:** Deposit Insurance Scheme
- Set up the new '**Deposit Protection Agency**'
- Maximum guarantee amount of 1 million baht per account or name
- Each bank pays different 'deposit insurance premium', depends on its credit risk. (i.e. weak banks pay higher rate than strong banks)
- The system should result in...
 - **different deposit rates:** weak banks offer higher rates to reflect their weak financial position.
 - **consolidation:** weak and small banks will be affected. They will be encouraged to merge with each other.

Deposit Insurance Scheme



The Coverage of insured deposits according to The Royal Decree on an extension of deposit coverage, is as follows:

Period	Coverage
11 Aug 2012 – 10 Aug 2015	Baht 50 million
11 Aug 2015 – 10 Aug 2016	Baht 25 million
11 Aug 2016 – Onwards	Baht 1 million

Coverage of
insured deposits

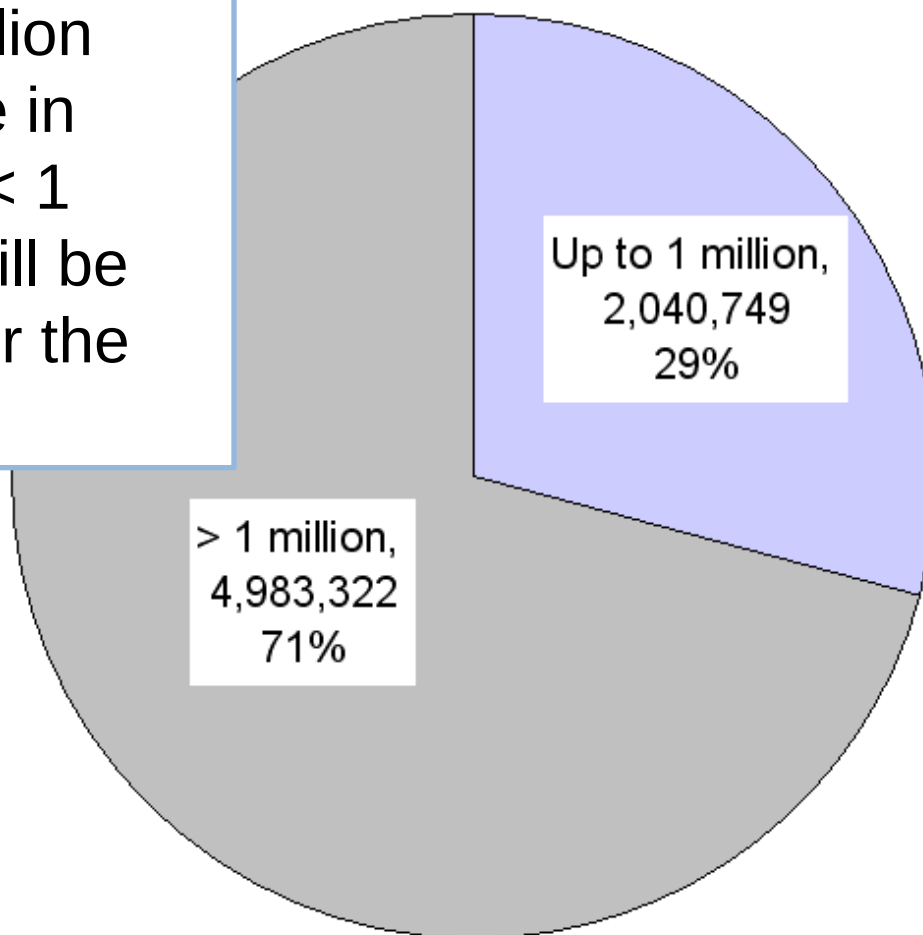


Deposits exceeding the coverage amount could be claimed from the liquidation process.

Deposit Breakdown by amount

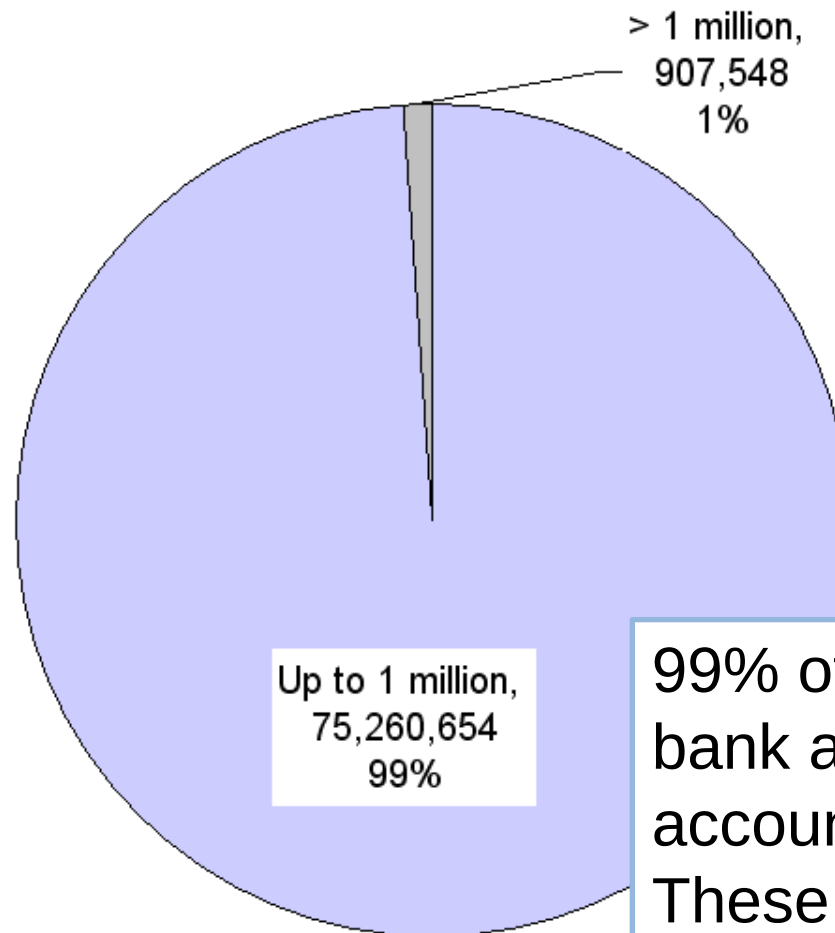
Amount of Bank Deposits classified by Account Size

29% of total 7 trillion baht deposits are in small accounts (< 1 million). These will be guaranteed under the new scheme.



Deposit Breakdown

Number of Bank Accounts classified by Account Size



99% of total 76 million bank accounts are small accounts (< 1 million). These will be guaranteed under the new scheme.

Deposit Insurance Scheme

Implication:

1. The majority of Thai people (about 75 million accounts) who have deposit less than 1 million baht will not have an impact from the new scheme.
2. The rich people (about 0.9 million accounts) who have deposit more than 1 million will be guaranteed up to 1 million Baht. They will have to face higher risk or find other sources of savings.
3. The burden on Thai government to guarantee bank deposit will reduce from 7 trillion to about 2-3 trillion Baht.