



INTERNATIONAL STATISTICAL INSTITUTE
REGIONAL STATISTICS CONFERENCE

PAYMENT SYSTEM STATISTICS TO SUPPORT POLICY FORMULATION IN INDONESIA

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Bali, 22-24 March 2017



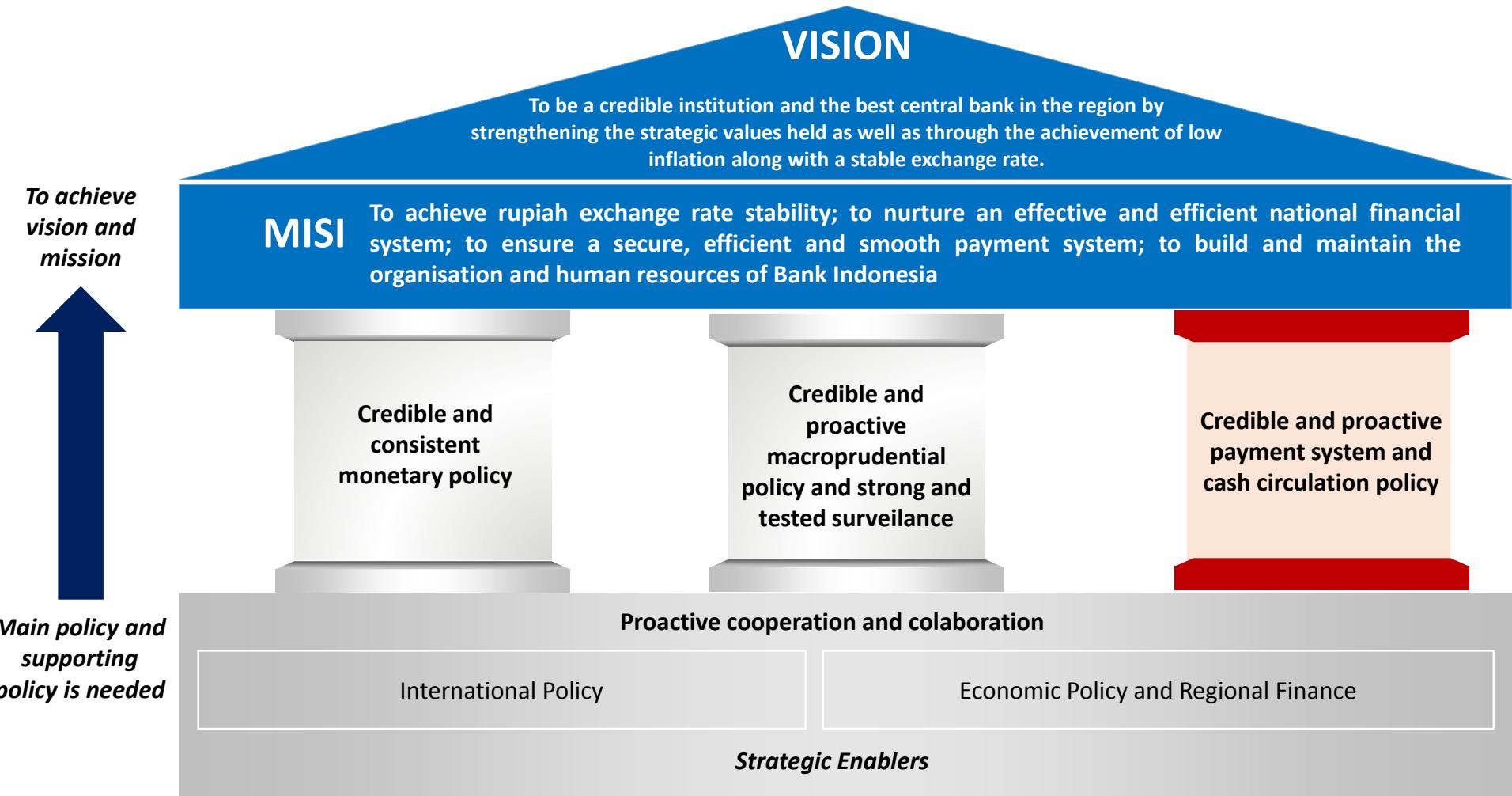
1 | AGENDA



1 | Introduction

Vision and Mission of Bank Indonesia

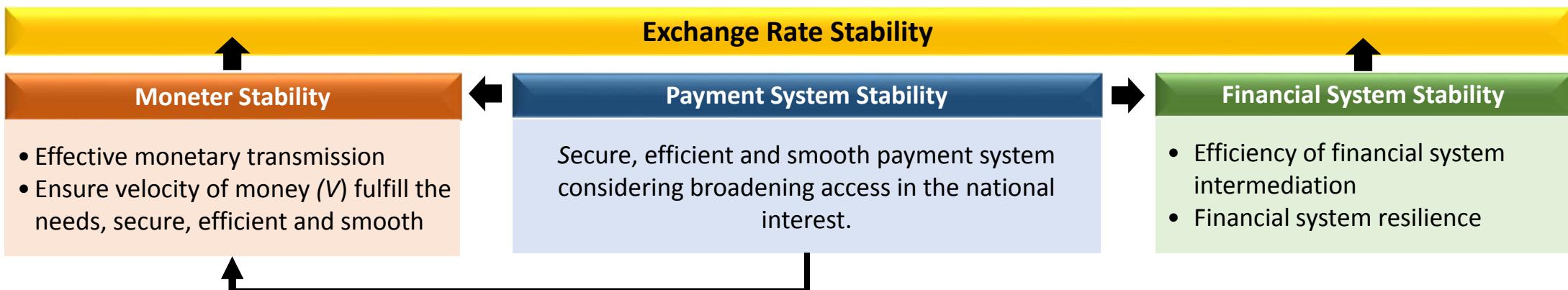
One of Bank Indonesia's mandate is to ensure smooth functioning of payment systems....



1 | Introduction

Linkage of Payment System Policy with Moneter and Financial System

To achieve its goal, the stability of the Rupiah, Bank Indonesia harmonize monetary, financial system stability and payment system policies. In this framework, payment system has a role in supporting policy transmision and financial system stability.....



support the efficiency of monetary policy transmision

“Velocity of money”
 $M \cdot V = P \cdot T$

M : money supply

V : velocity of money

P : price

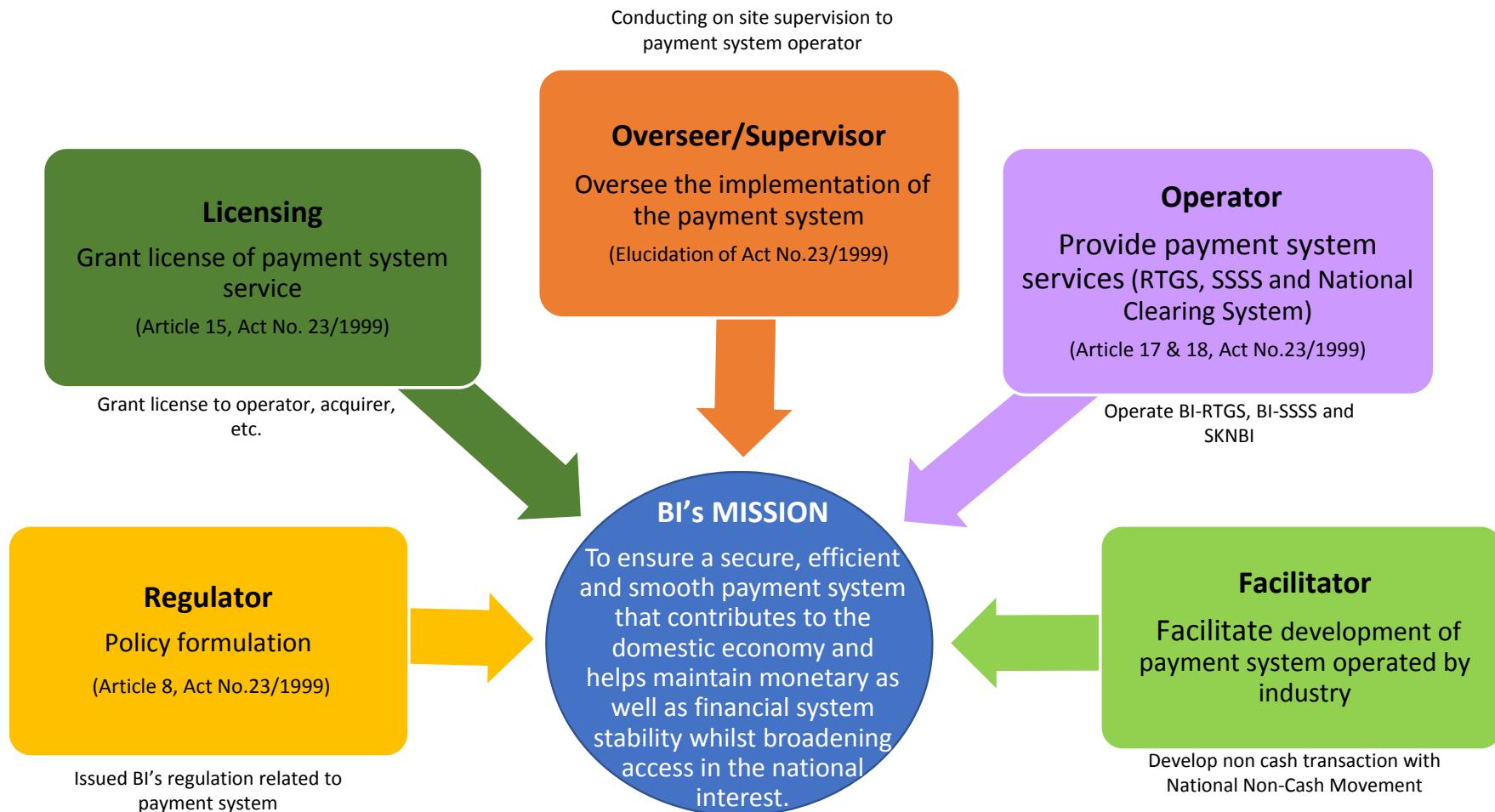
T : goods and service which transacted

- Policy (e.g. access policy, pricing policy, regulation)
- Instrument, institutional, mechanism, Infrastructure
- Payment System Surveilence
 - ✓ Individual : smooth transaction
 - ✓ Systemic : liquidity system preservation of payment systems main players
 - ✓ System should ensure settlement mechanism which final and irrevocable
- For safety, settlement using central bank fund

1 | Introduction

Bank Indonesia's Role in Payment System

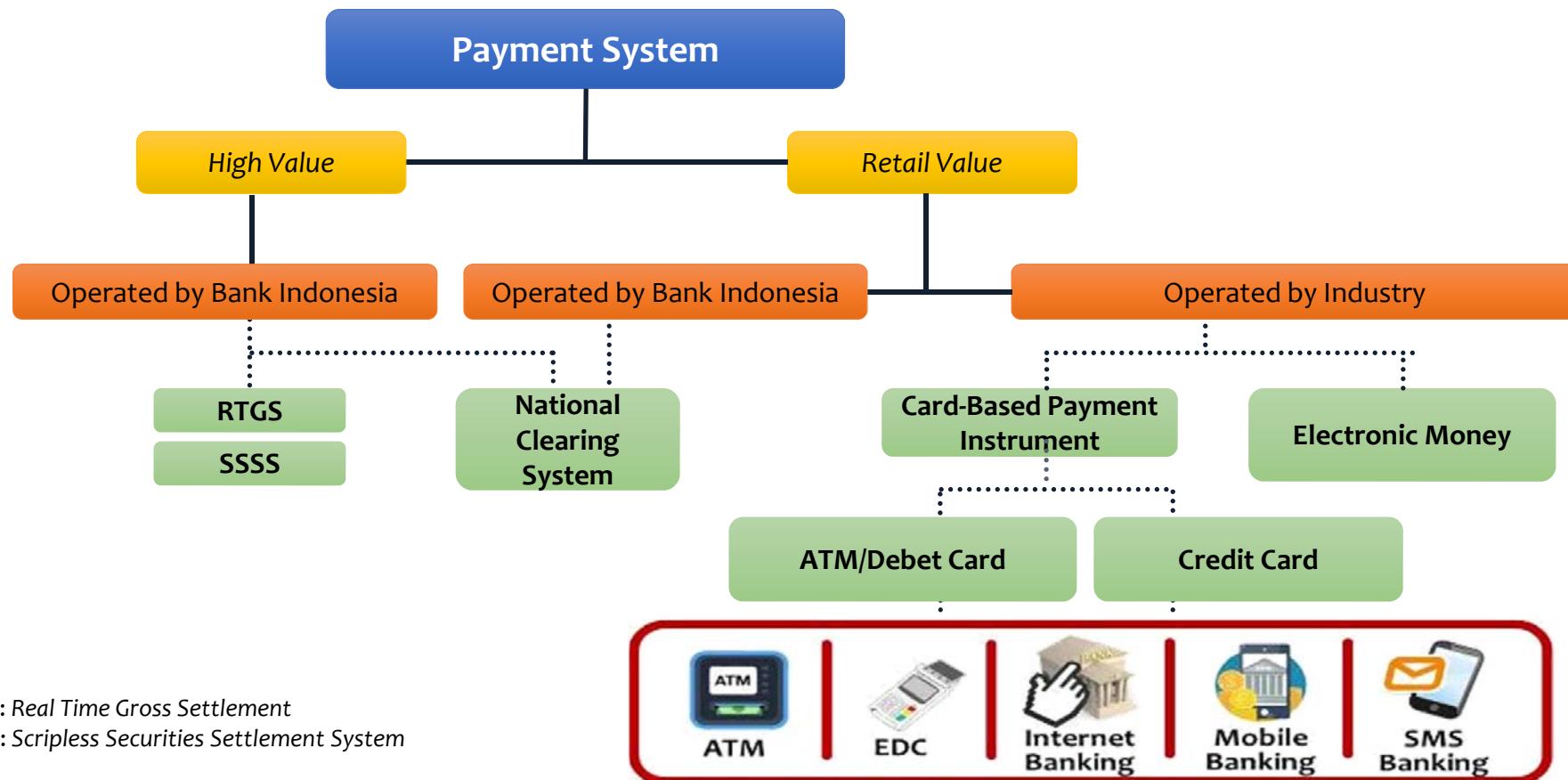
According to Acts Number 23 / 1999, Bank Indonesia has a clear mandate as a regulator, licensor, overseer/supervisor, operator, as well as facilitator to the national payment and settlement system...



1 | Introduction

Payment System Component in Indonesia

Bank Indonesia has a broad access to the national payment & settlement data, either high value and retail payment....

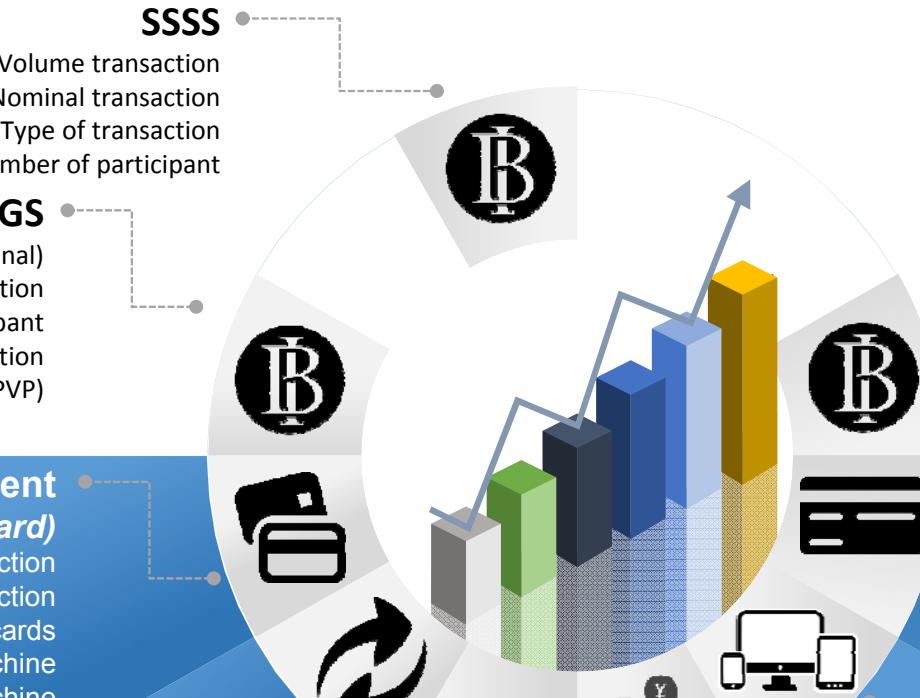


1 | Introduction

Payment System Data in Bank Indonesia

Payment System Liquidity Index

- Total of transaction (volume and nominal)
 - Daily average transaction
 - Number of participant
 - Type of transaction
- Payment Versus Payment (PVP)



- Volume transaction
- Nominal transaction
- Type of transaction
- Number of participant

RTGS

- Total of transaction (volume and nominal)
 - Daily average transaction
 - Number of participant
 - Type of transaction
- Payment Versus Payment (PVP)

OPERATED BY BANK INDONESIA

National Clearing System

- Nominal transaction
- Volume transaction
- Number of participant
- Type of transaction (debit clearing transfer, credit clearing, return clearing)

Card-Based Payment Instrument (ATM/Debit Card and Credit Card)

- Volume transaction
- Nominal transaction
- Number of cards
- Number of ATM machine
- Number of ED machine
 - Fraud
- Number of operator

Non Bank Transfer Fund

- Volume transaction
- Nominal transaction
- Outgoing & incoming domestic transactions (per province)
- Number of operator

Central Depository and Book Entry Settlement System (C-BEST)

E-Money

- Volume transaction
- Nominal transaction
- Number of instrument
- Total Operator
- Financial Inclusion

Delivery Channel (Phone Banking, SMS/Mobile Banking, Internet Banking)

- Volume transaction
- Nominal transaction

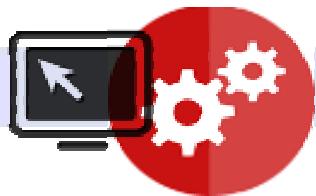
Money Remittance Business Activity

OPERATED BY INDUSTRY

2 | Payment System Development in Indonesia Payment System Ecosystem

Bank Indonesia manages BI-RTGS settlement statistics and statistics of card-based payment instruments....

Operated by Bank Indonesia



BI RTGS Participants

143



National Payment Clearing Participants

138

BI SSSS Participants

176

Operated by Industry



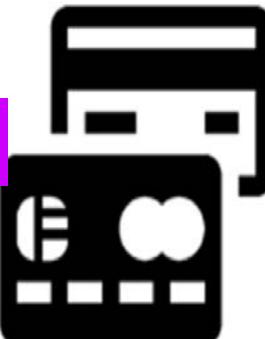
103 thousand

ATM Machine



ATM-D Cards

139 million



Credit Cards

17million



Electronic Money

58 million

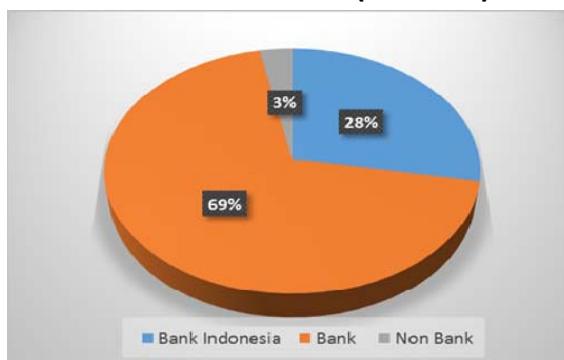
EDC

1 million

2 | Payment System Development in Indonesia BI-RTGS Data - I

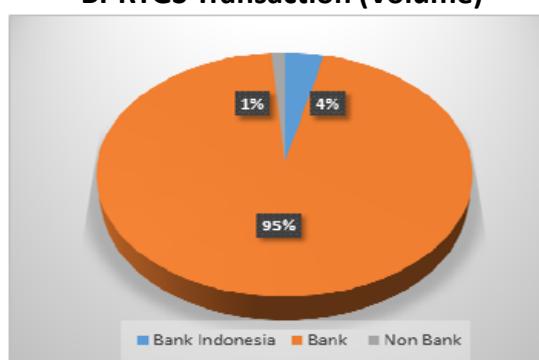
Bank Indonesia manages statistics of all BI-RTGS' participants, including all banks in Indonesia. The statistics available in individual basis, high frequency (daily series) and lag one day....

BI-RTGS Transaction (Nominal)



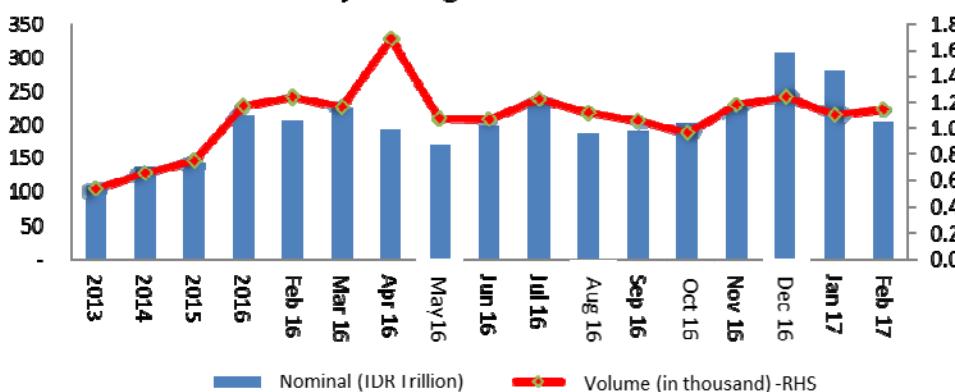
Source: BI-RTGS, Feb 2017

BI-RTGS Transaction (Volume)



Source: BI-RTGS, Feb 2017

Growth of Daily Average BI-RTGS Transactions



Source: BI-RTGS, 23 Feb 2017

- Daily average of BI-RTGS transaction reached Rp473.9 trillion and 38.226 transactions.
- BI-RTGS participants: 141, with 136 banks (69% of total nominal and 95% of total volume BI-RTGS transactions)
- Thus, **banking industry dominate the payments system liquidity in BI-RTGS**, thus the BI-RTGS liquidity can describe banking industry liquidity conditions in Indonesia.
- Availability bank individual's statistics **allows analysis is carried out both per group/classification of banks as well as individually.**

Nominal (IDR Trillion) - LHS

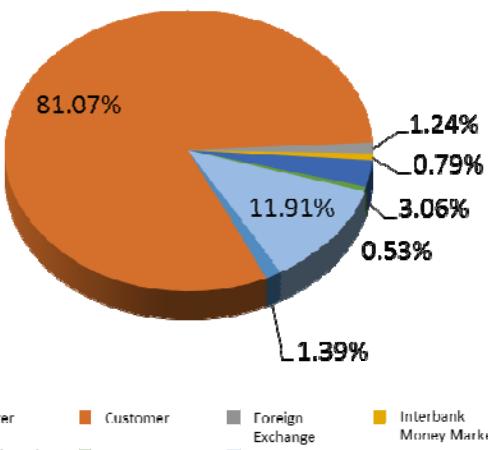
Volume (in thousand) - LHS

2 | Payment System Development in Indonesia BI-RTGS Data - 2

BI-RTGS statistics can be breakdown in accordance with the code of the transaction, e.g. government transactions, customer transactions, interbank money market transactions...

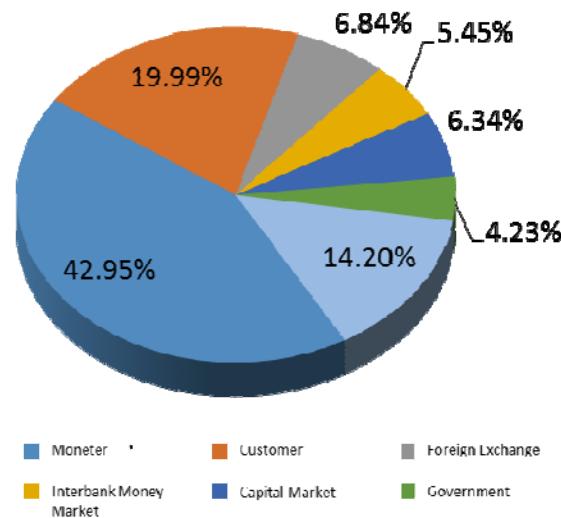
The availability of high frequency BI-RTGS statistics with a lot of variations and low lag, is driving Bank Indonesia to utilize data as part of **strengthening policy formulation** in the **payment system area** itself as well as **macroeconomic and financial system stability's** policies.

BI-RTGS Transaction (Volume)



Source: BI-RTGS, 23 Feb 2017

BI-RTGS Transaction (Nominal)



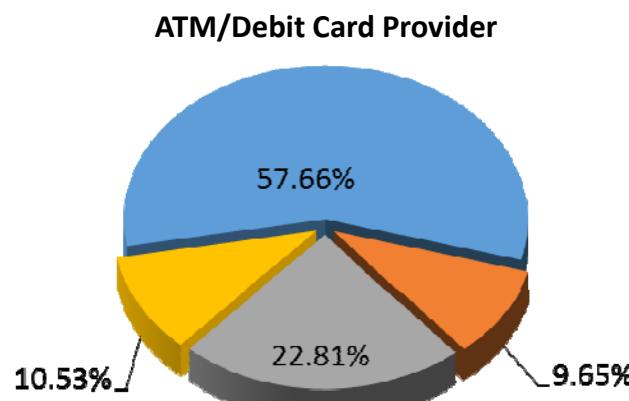
Source: BI-RTGS, 23 Feb 2017

2 | Payment System Development in Indonesia Retail Payment System Data - I

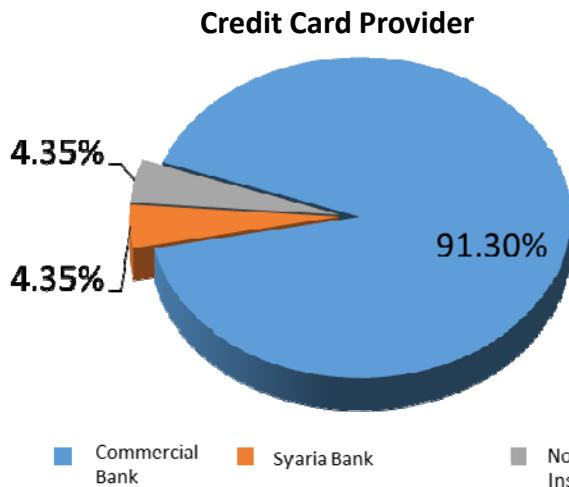
Bank Indonesia manages statistics of card-based payment instruments which is includes ATM Debit Card, Credit Card, and Electronic Money...

- Retail payment statistics includes statistics of providers, the number of outstanding instruments, and transaction statistics both in volume and nominal per issuers of the non cash payment instruments.
- Presented on a **monthly basis** obtained from **the bank or non bank**, reported online through Commercial Bank Head Office Report and Non Commercial Bank Report (CB and NCB Report) application with a **lag of one month**.

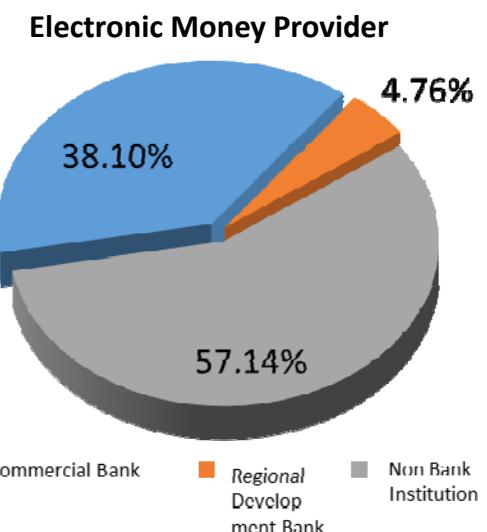
Number of Provider



Source: CB and NCB Report, Jan 2017



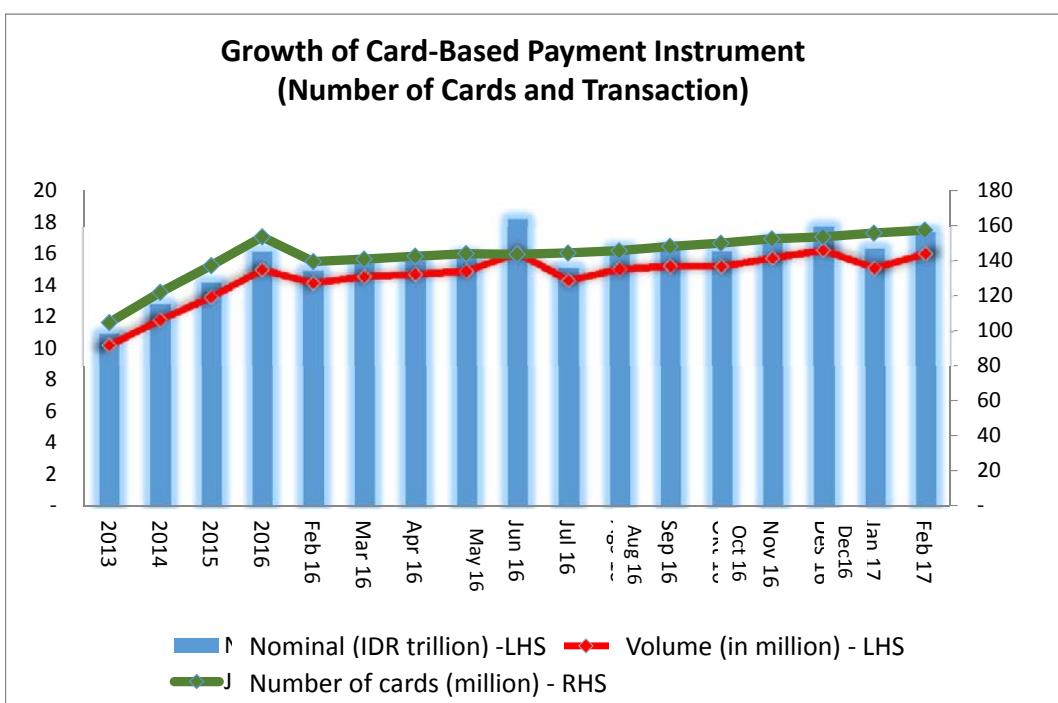
Source: CB and NCB Report, Jan 2017



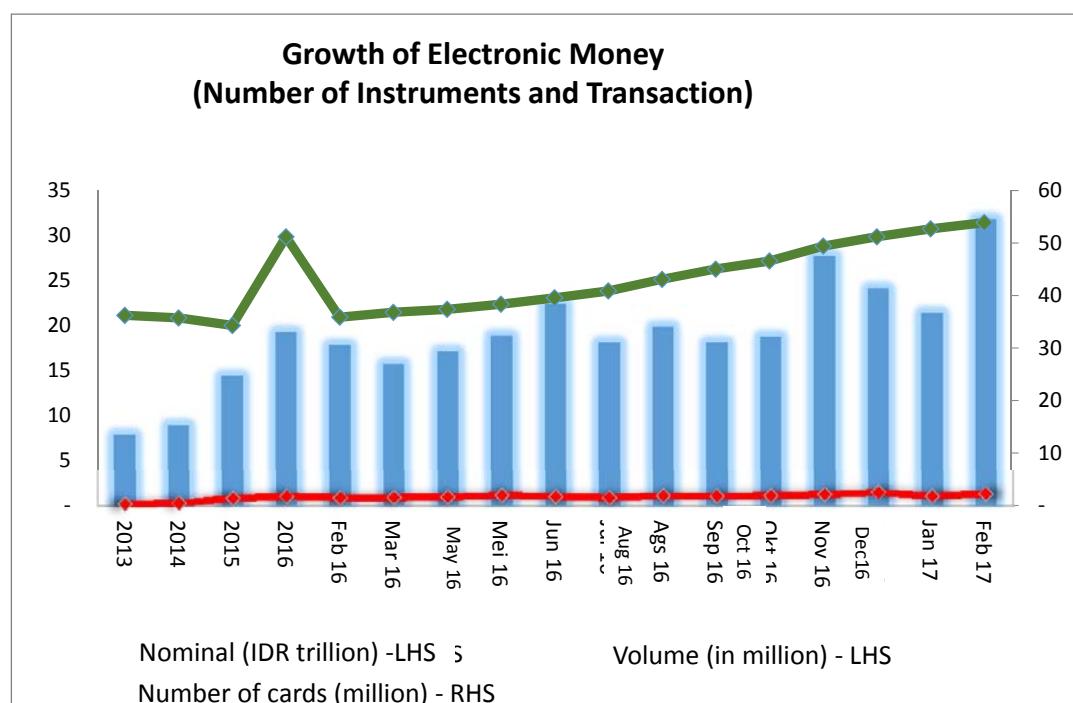
Source: CB and NCB Report, Jan 2017

2 | Payment System Development in Indonesia Retail Payment System Data - 2

The analysis from retail payment statistics is used for policy formulation in payment system area in order to increase the efficiency of the economy by promoting consumer protection. The analysis also used to strengthen Bank Indonesia's policy mix formulation on monetary and financial system stability...



Source: CB and NCB Report, Jan 2017

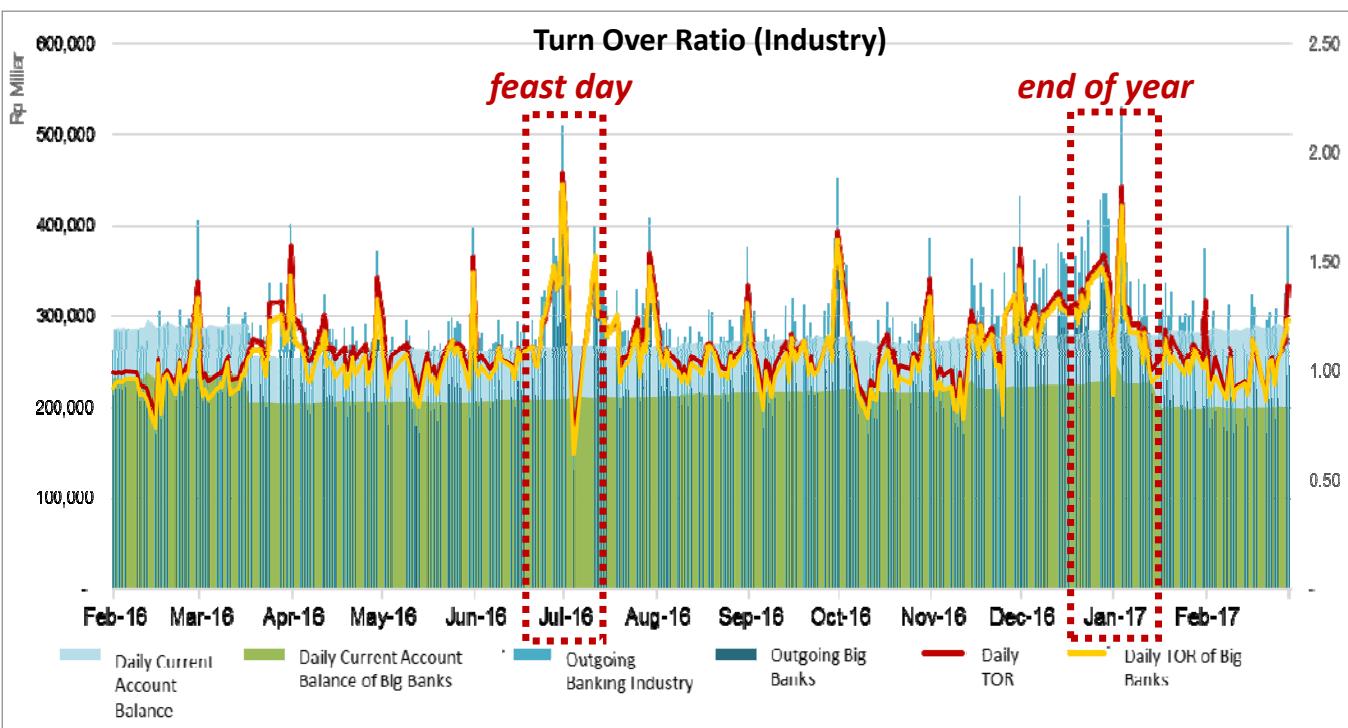


Source: CB and NCB Report, Jan 2017

3 | Payment System Statistics as a Tool for Financial Market Risk Monitoring Turn Over Ratio (TOR) - I

The availability of BI-RTGS statistics in a daily basis allows the use of these statistics for either weekly or monthly surveillance...

- The indicators used are Turn Over Ratio (TOR), throughput zone III, and interconnectedness.
- The surveillances of the payment system liquidity perform both weekly and monthly on the basis of banking industry and group of banks, also to individual bank if necessary.

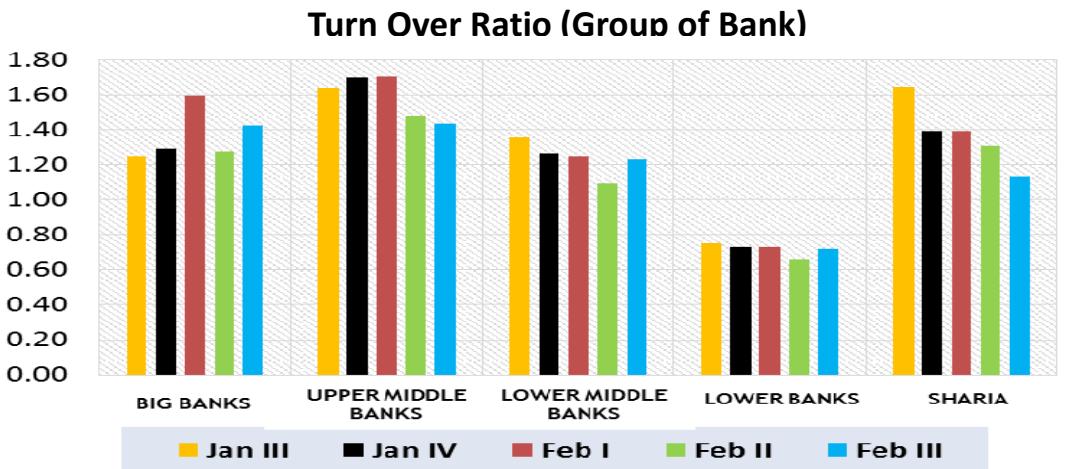


TURN OVER RATIO (TOR)

- Reviewing the historical pattern, such as the **increase of banking industry's TOR around feast day, holiday and end of year** which is a **common phenomenon** due to increasing payment system activities by customers and government.
- Bank Indonesia **will observe if the significant increasing of TOR beyond this seasonality period** since it may impact on the smooth of payment systems.
- If this condition occurs within a time long period, this analysis delivered as the input for the assessment of macroeconomic or the financial system stability for further analysis.

3 | Payment System Statistics as a Tool for Financial Market Risk Monitoring Turn Over Ratio (TOR) - 2

TOR surveillance is also applied on group of banks to see whether there is a change on banks' behavioral pattern on their liquidity management in BI-RTGS. ...



Source: BI-RTGS, Feb 2017

Turn Over Ratio (Daily)

Bank Grouping*	2016	Feb III 2016	13/2/2017	14/2/2017	16/2/2017	17/2/2017	Feb II 2017	Feb III 2017
Big Banks	1.43	1.24	1.23	1.09	1.86	1.53	1.28	1.43
Upper Middle Banks	1.52	1.51	1.33	1.22	1.68	1.52	1.48	1.44
Lower Middle Banks	1.26	1.06	1.13	1.08	1.39	1.32	1.09	1.23
Lower Banks	0.81	0.63	0.69	0.63	0.80	0.77	0.66	0.72
Sharia Banks	1.43	1.22	1.27	1.23	1.08	0.96	1.31	1.14

Source: BI-RTGS, Feb 2017

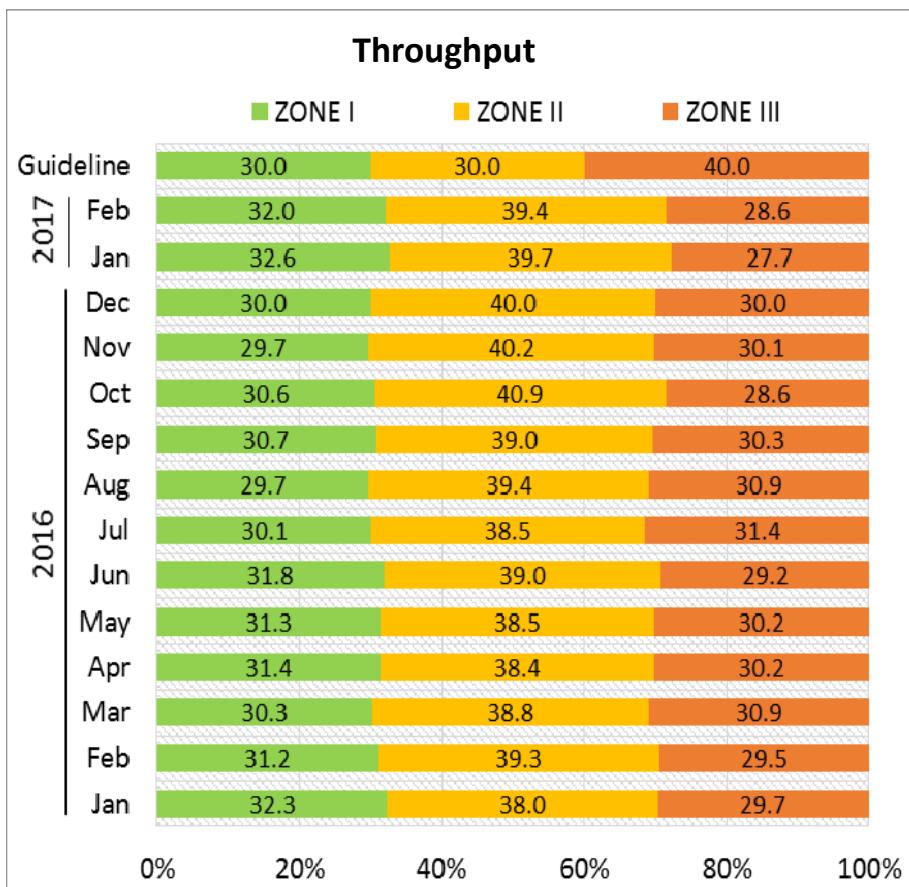
- Historically, **groups of Big Banks has TOR<1**, which means that settlement obligations of this group of banks can be settled only by using their current account balance in Bank Indonesia.
- The significant increase on TOR of Big Banks group, especially when it exceed 1, should be closely surveilled since these banks **cover 70% of liquidity in payment system** which will impact the liquidity tightness of payment system of all banking industry.
- Other groups of banks have **TOR>1**, means that their settlement obligations can be settled only if there is incoming fund transfer since their current account balance in Bank Indonesia is not sufficient to cover their settlement obligations
- Surveillance on TOR indicator **can be applied daily basis if necessary.**

*) Bank Grouping:

- Big Banks: bank with core capital min. IDR30 trillion
- Upper Middle Banks: bank with core capital min. IDR5 trillion - <IDR30 trillion
- Lower Middle Banks: bank with core capital min. IDR1 trillion - <IDR5 trillion
- Lower Banks: bank with core capital <IDR1 trillion

3 | Payment System Statistics as a Tool for Financial Market Risk Monitoring Throughput

Troughput guideline is set by Bank Indonesia to avoid accumulation of BI-RTGS settlement at the end of day which will lead to the increase of risk of settlement...



Source: BI-RTGS, Feb 2017

THROUGHPUT

- The throughput guidelines can be used to achieve the desired liquidity turnover efficiency and also have risk-reduction benefits since they help to reduce the level of tiering in the financial system.
- Bank Indonesia imposes that value of transactions settled on every zone (calculated as % from all the settlement transaction during the day) :
 - Zone I max 30%
 - Zone II max 30%
 - Zone IV max 40%

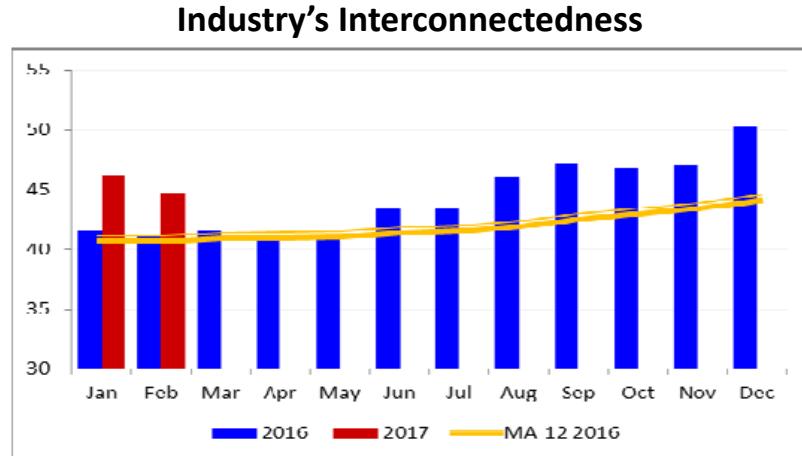
The increase of throughput zone III indicate the increase of risk in BI-RTGS settlement, also reflect the increase of liquidity's tightness in banking industry.
- The distribution of BI-RTGS settlement that follow this guidance indicates that payment system liquidity condition is well managed
- Historically, throughput zone III was increased due the increasing macroeconomy and financial system instability in 2005 (high inflation) and 2008-2009 (Global Financial Crisis).

3

Payment System Statistics as a Tool for Financial Market Risk Monitoring Interconnectedness

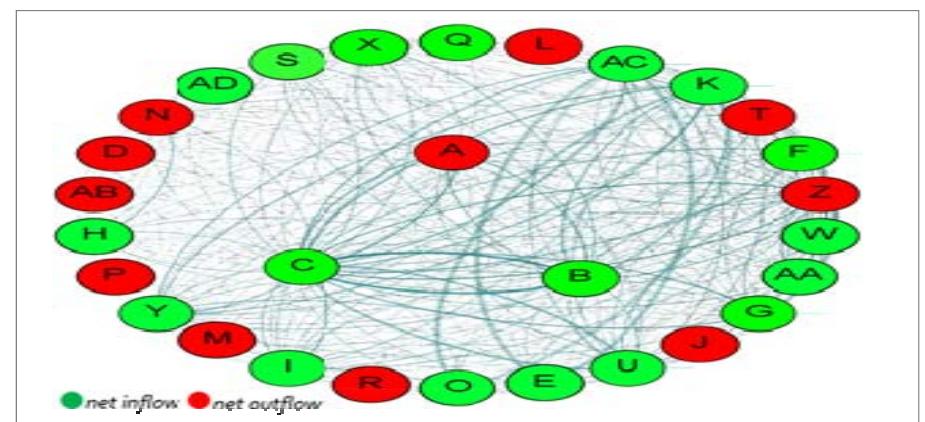
Bank Indonesia also monitors level of connectivity among BI-RTGS participants (interconnectedness) which indicates the distribution of concentration risk in the payment system...

INTERCONNECTEDNESS



Source: BI-RTGS, Feb 2017

Interconnectedness' Pattern



Source: BI-RTGS, Feb 2017

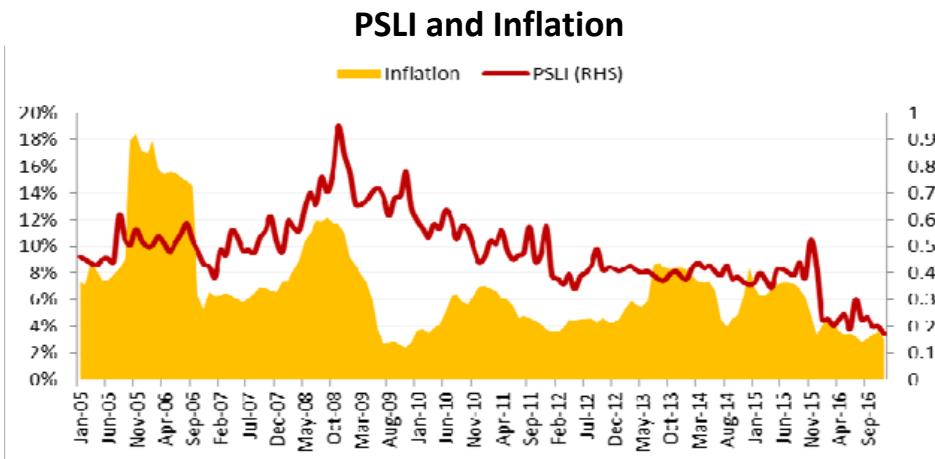
- **High interconnectedness** indicates that concentration **risk is equally distributed** and fewer banks dominate BI-RTGS transactions. Historically, interconnectedness will **increase significantly at the end of year period** following the increase of RTGS transactions from both customers and government approaching end of year book closing.
- The significant decrease of interconnectedness on certain period should be closely surveilled since it indicates the **increase of concentration risk in BI-RTGS system** (only a few banks that have big role in payment system and these banks' settlement failure will give spillover effect to other banks).
- The attention is mainly focused on banks with a **high interconnectedness and net outflow** pattern in BI-RTGS, in this case "bank A". These banks **have more settlement obligations than incoming fund transfers** and have transaction interconnectivity with many banks. Settlement failure on this type of bank will give spillover effect to other banks which have transaction relation.

3 | Payment System Statistics as a Tool for Financial Market Risk Monitoring

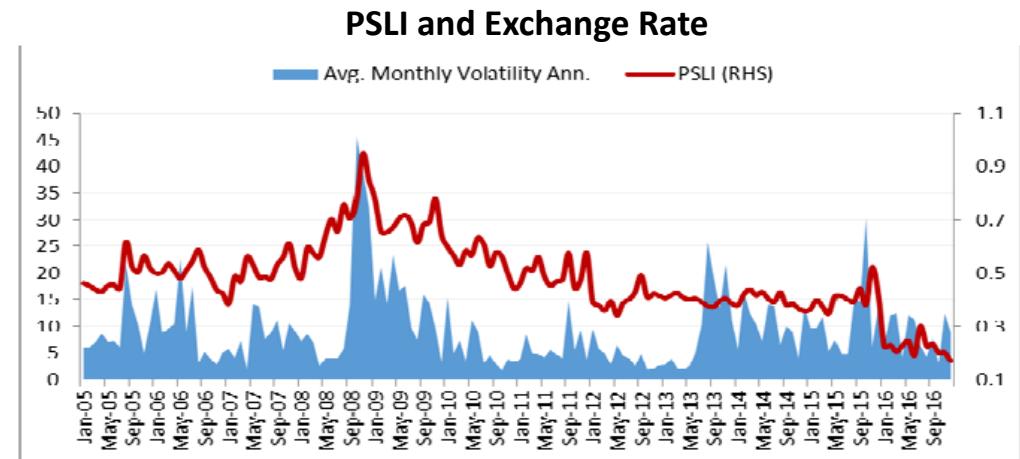
Payment System Liquidity Index (PSLI)

Bank Indonesia construct an composite index from various settlement statistics : (i) liquidity of RTGS (turnover ratio, queue, placement on Monetary Operations), (ii) Interbank Money Market Transactions (frequency, spread of interbank money O/N with policy rate), and (iii) interconnectedness....

- PSLI is used both as a **surveillance tool** as well as an input to the formulation of macroeconomic stability policy and financial system policy.



Source: BI-RTGS, Reuters

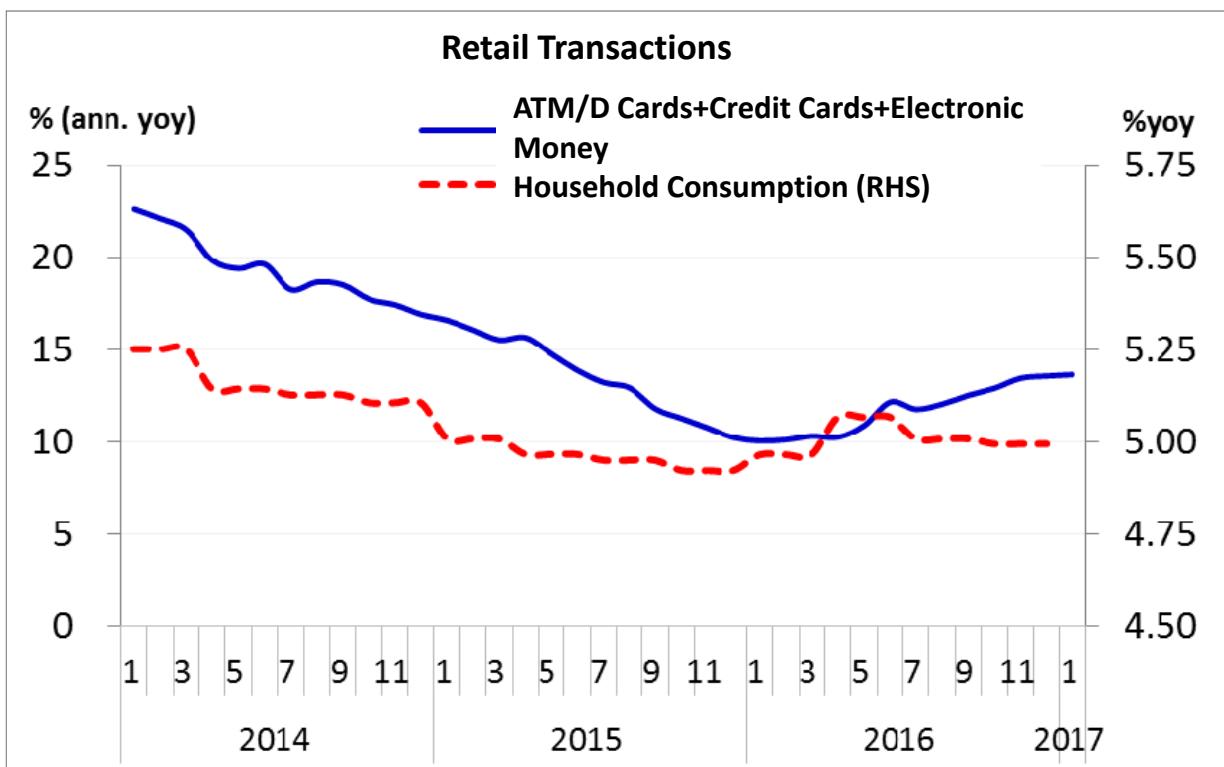


Source: BI-RTGS, Reuters

- PSLI **able to capture changes in banking industry's behavior liquidity**, both driven by changes in macroeconomic or financial system stability:
 - PSLI increase significantly in the period mid-2005 in line with the increase of inflation pressure driven by rising fuel prices in that period.
 - PSLI also showed an increase in the period between 2008 and 2009 when the Global Financial Crisis, due the increasing the volatility of exchange rate.

4 | Payment System Statistics as a Prompt Indicator for Economic Activity Tracking Household Consumption

Bank Indonesia uses statistics of retail payment transactions (ATM-Debit, credit card and electronic money) as a tracking for household consumption. this statistics could describe the dynamics of household consumption reasonably well.....



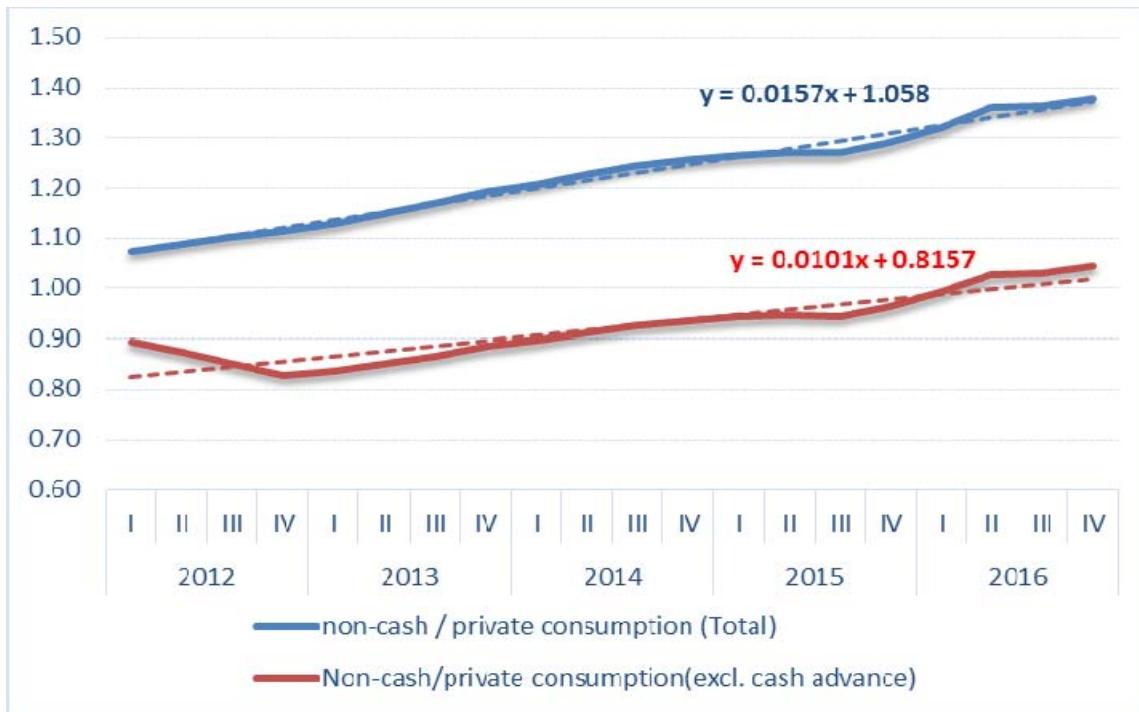
Source: CB and NCB Report, Jan 2017

- The figure on current household consumption is very important for Bank Indonesia macroeconomy and financial system's policies formulation considering household consumption contributes highest portion in Indonesia GDP, reaching 55.31% on 4th quarter 2016.
- The retail payment statistics that available before the release of Gross Domestic Product (GDP), including household consumption, gives early figure on the growth of household consumption.

4 | Payment System Statistics as a Prompt Indicator for Economic Activity National Non-Cash Movement

Non-cash transactions statistics are used to monitor the National Non-Cash Movement progress to decide the further right policy...

Growth of Non Cash Transactions



- Bank Indonesia launched the National Non-Cash Movement in August 2014, to encourage the use of non-cash transactions by the public.
- Based on current statistics, National Non-Cash Movement progress are quite good, but public preference of using cash is still high. It is reflected from the slope ratio which includes cash transactions is higher than the slope which purely non-cash transactions (Graph 18).
- Therefore, Bank Indonesia has to continue the effort to improve the efficiency of the economy through non-cash transactions.

Source: CB and NCB Report, BPS

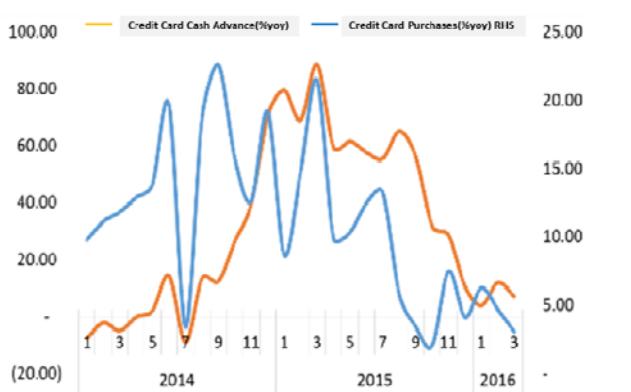
5

Payment System Statistics for Policy Review and Policy Formulation Strengthen the Policies - I

Bank Indonesia also using retail payment statistics to strengthen the policies in order to increase the efficiency of the national economy by promoting consumer protection...

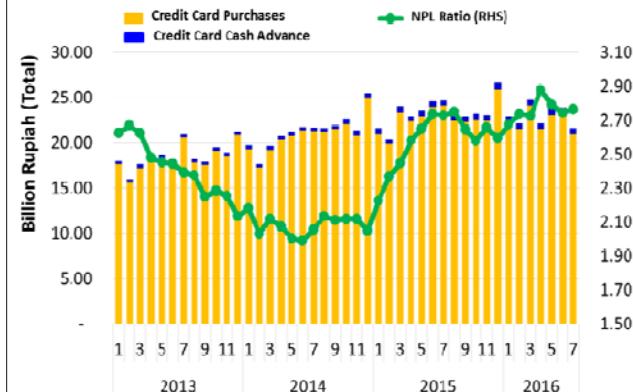
- In the end of 2016, Bank Indonesia adjust the maximum interest rate of credit card, considering the current macroeconomic conditions, financial data of issuer and the growth of credit card transactions.
- Along with the economic slowdown in the past few years, there is a **declining trend of credit card usage** which **followed by an increase in Non-Performing Loan (NPL)**, especially in **low credit limit segment** or in this case people with low income levels. On the side of issuer, the **highest cost is the Cost of Allowance for Impairment Losses** to cover the upward trend in credit card NPL.
- In order to **increase public confidence for using credit cards and to boost healthier credit cards industry**, Bank Indonesia decreased the maximum interest rate credit card from 2.95% per month to 2.25% per month.

Credit Card Transactions



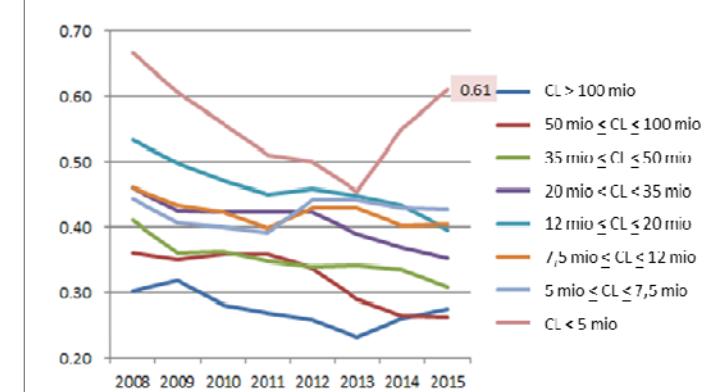
Source: CB and NCB Report

NPL Ratio of Credit Card



Source: CB and NCB Report

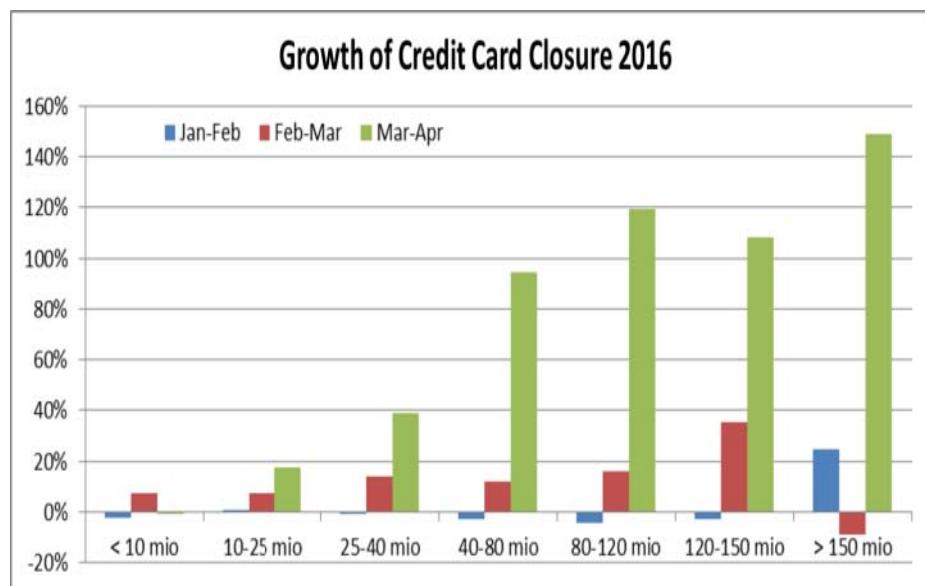
Credit Card Revolving Rate



Source: CB and NCB Report

A sharp increase in closures credit card by customers' initiative, especially in the upper credit limit segment, can led consumer protection issue...

Credit Card Closure



Source: CB and NCB Report

- Along with this interest rate policy, Bank Indonesia also **require issuers to deliver a closing statement** when credit cards customers closed their credit card.
- This policy were taken as a step to **strengthen consumer protection of payment system** due the significant increase of credit card closure in mid-2016 which can led consumer protection issue.

6 | CONCLUSION

Bank Indonesia continuously strengthen the conduct of policy formulation on payment system as well as in monetary and financial system stability based on in-depth analysis of the data (research-based policy), including the use of the payment system data...

1 BI-RTGS settlement Statistics

- A good indicators to reveal the broad picture of banking liquidity.
- PLSI could reflect the liquidity conditions influenced by changes in both macroeconomic condition and financial system condition.
- Use as a **monitoring tool in payment system** as well as **strengthening policies formulation** in macroeconomic and financial system stability.



2 Retail Payment Statistics

- Capture the dynamics of the household consumption reasonably well.
- Reflect the adoption of non-cash payment system instruments in the society, as an **input for payment system policy** to boost non cash transactions.
- A service to Bank Indonesia's **policy assessment and formulation** concerning consumer protection framework and financial inclusion strategy.

Thank you!

