ADB

ASIAN BOND MARKETS INITIATIVE

ASEAN+3 Bond Market Forum (ABMF)

MEETING AGENDA

30TH ASEAN+3 BOND MARKET FORUM (ABMF) MEETING

28-29JANUARY 2019

Auditorium Zone ABCD

Asian Development Bank Manila, Philippines

TIME	PROGRAM
DAY 1 – 28 January 2019: ABMF Sub Forum 1 (SF1) Meeting	
08:30 – 09:00	**Registration**
09:00 – 09:10	**Welcome Remarks** by Mr. Bambang Susantono, Vice President (Knowledge Mgt and Sustainable Devt), ADB
09:10 - 09:15	**Opening Remarks of SF1** by Mr. Koji Ito, Sub Forum 1 Chair
09:15 - 10:45	**Session 1: Update of ASEAN+3 Multi-Currency Bond Issuance Framework** Presentation on the first CGIF-guaranteed AMBIF Bond in the Philippines - Presentation by SEC Philippines (20 min) by Comm. Ephyro Amatong • Role of regulators to innovate the market - Presentation by AEON Credit Philippines (30 min) by Mr. Takayuki Araki • Fintech and bond market to support financial inclusion Presentation on the first corporate bond in Cambodia - Presentation by SEC Cambodia (20 min) by Mr. Rady Mok • First bond issue: lessons for other markets - Presentation by SBI Royal (20 min) by Mr. Seng Chan Thoeun • Prospect of Cambodia Bond Market
10:45 – 11:05	*Coffee Break*
11:05 - 11:20	**Session 2: Update of CGIF guarantee operations** by Mr. Kiyoshi Nishimura, Credit Guarantee and Investment Facility (CGIF)
11:20 – 12:15	**Session 3: Country study update** by Mr. Kengo Mizuno, Nomura Research Institute as TACT consultant - Corporate bond regulations in Indonesia, Lao PDR and Viet Nam
12:15- 12:35	**Session 4: Bond Market Guide Update** by Prof. Shigehito Inukai, ADB Secretariat - China exchange market and interbank bond market
12:35 – 12:55	**Session 5: Asian Bonds Monitor update** by Dr. Donghyun Park and Dr. Shu Tian, ABO team, ADB

TIME	PROGRAM
12:55 – 13:00	**Closing Remarks** by Mr. Koji Ito, Sub Forum 1 Chair
13:00 – 14:10	*Lunch (EDR Coffee Lounge, 2nd Floor)*
ABMF Sub Forum 2 (SF2) Meeting	
14:10 – 14:15	**Opening Remarks by** Mr. Seung-Kwon Lee, Sub Forum 2 Chair
14:15 – 14:30	**Session 6: Recap of account structure study and taxation** by Messrs. Shinya Kim, Daisuke Kim & Naotaka Shibasaki, NTT DATA System Technologies Inc., International Expert
14:30 – 15:00	**Session 7: Update on the New Registry of Scripless Securities (nRoSS) in the Philippines** by DTOP Erwin Sta. Ana, Bureau of Treasury of the Philippines - Improvements in account structure management
15:00 – 15:15	**Session 8: Progress and update on standardization in the Philippines** by by Ms. Cornelia Dagdag, PH-NMPG
15:15 – 15:35	*Coffee Break*
15:35 – 15:55	**Session 9: Progress and update on standardization in the region** by Ms. Cindy Foo, SWIFT
15:55 – 16:05	**Wrap-up** by Mr. Satoru Yamadera, ADB Secretariat
	Slideline meetings between the members and the Secretariat team - The secretariat will request a meeting with selected members.
17:30	*Welcome cocktail (ADB Central Courtyard)*
DAY 2 – 29 January 2019: ABMF Sub Forum 2 (SF2) Meeting	
08:30 – 09:00	**Registration**
09:00 – 10:20	**Session 10: WG-Cross-Border Collateral and Repo** - Recap of WGCR discusson by Messrs. Shinya Kim, Daisuke Kim & Naotaka Shibasaki, NTT DATA System Technologies Inc., International Expert (15 min) - Study on prime collateral usage in Asia by Dr. Gong Pil Choi, Korea Institute of Finance (20 min) - Presentation by Mr. Eric Chng, BNY Mellon on APAC Hub (15 min) - Presentation by Mr. Fei Tao, CCDC on cross-border collateral service (30 min)
10:20 – 10:40	*Coffee break*

TIME	PROGRAM
10:40 – 11:10	**Session 11: Use of Distributed Ledger Technology by market infrastructures** by Ms. Cornelia Dagdag, DTCC
11:10 – 11:40	**Sesson 12: APEC Data Ecosystem Roadmap** by Dr. Julius Caesar Parreñas, Mizuho Bank, Ltd - APFF
11:40 – 12:00	**Session 13: Good Practice to develop a Bond Market** by Mr.. Satoru Yamadera, ADB Secretariat
12:00 – 12:10	**Wrap-up** by Mr. Satoru Yamadera, ADB Secretariat
12:10 – 12:15	**Closing Remarks** by Mr. Seung-Kwon Lee, SF2 Chair
12:15 – 13:15	*Lunch (EDR Coffee Lounge, 2nd Floor)*
17th CSIF Meeting 13:15 - 16:30 CSIF meeting (official members and observers only)	
ABMF - Slideline meetings between the ABMF members and the Secretariat team The secretariat will request a meeting with selected members.	

Session 10 : SF2 WG Cross-Border Collateral and Repo

30th ABMF Meeting

Daisuke Yachi
NTT DATA SYSTEM TECHNOLOGIES Inc.

Global IT Innovator
NTT DATA Group
NTT DATA

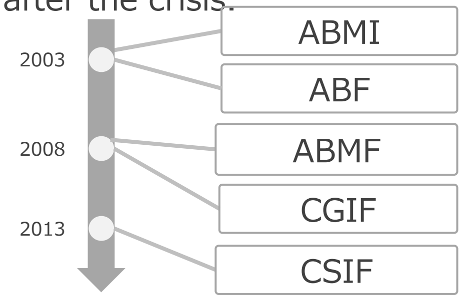
Backgrounds of establishment of WG-CBCR

- In Europe and the US, secured or collateralized transactions have increased after the financial crisis.
- Similarly, Asia will face increase in demand for more secured transactions.

Asia

Asian currency crisis in 1997

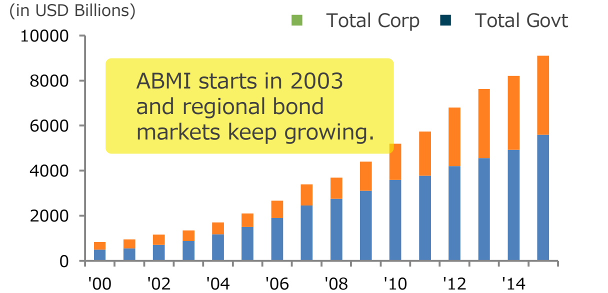
- Various international projects have been carried out so far after the crisis.



- Outstanding of LCY bonds is increasing thanks to improvements of Asian bond markets.

Historical Growth of Asian LCY Bond Market (excluding Japan)

source : Asian bond online



- Can we utilize such large LCY bonds for secured transactions regionally?

Europe and the U.S.

The financial crisis in 2008

- A chain bankruptcy of market participants
- The fall in security prices and increases of margin call
- Having difficulties in funding due to sudden drop of liquidity

Market

- The change from uncollateralized to collateralized

Regulation

- Margin requirements for non-centrally cleared OTC derivatives
- The LCR requirement

- Repo markets become more important.

- Collateral demand will increase globally because of Basel III

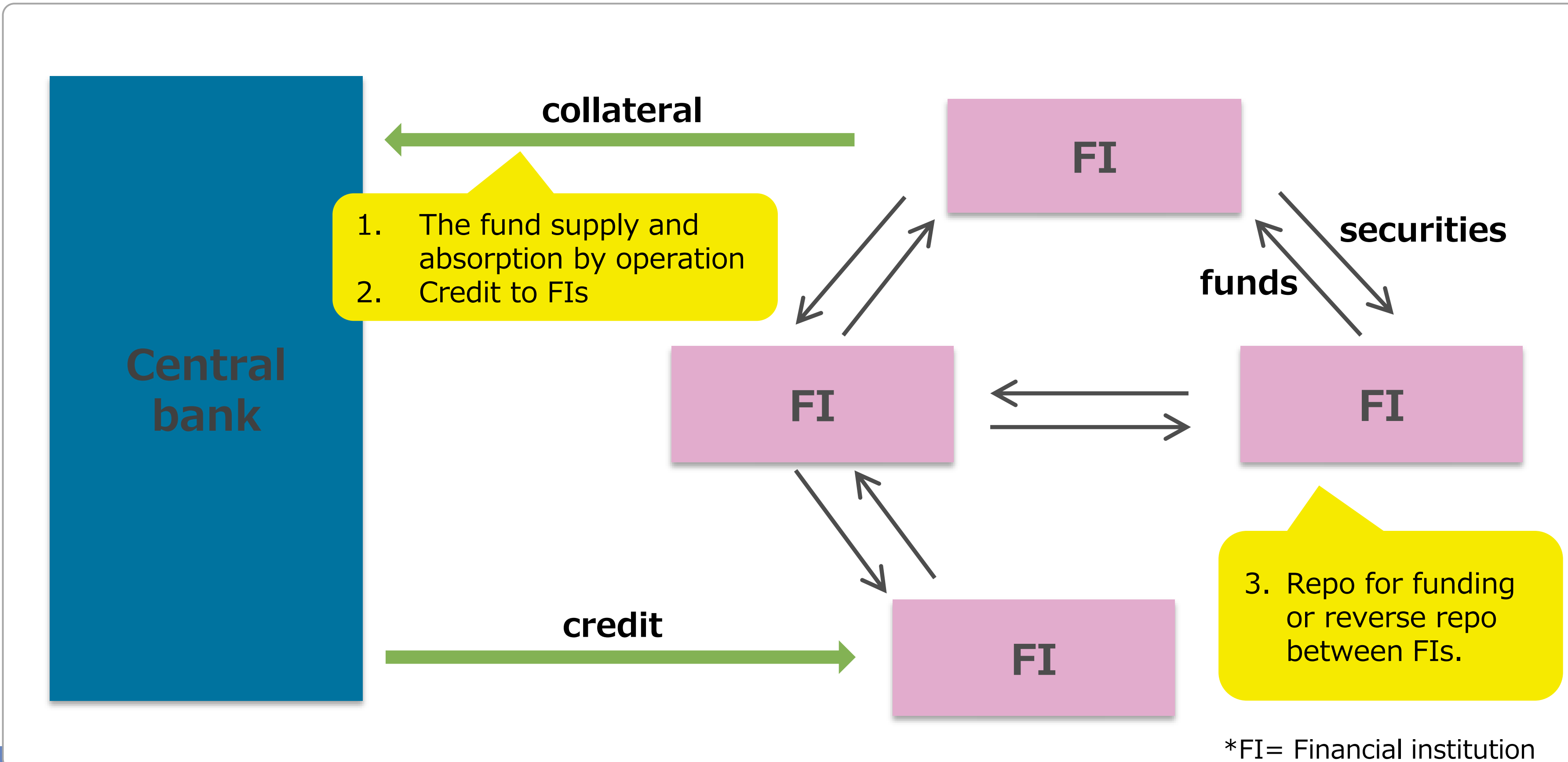
Under these circumstances, this WG was established to find out current CBCR market situation and understand impediments for CBCR.

Conceptual understanding of collateral and repo business

- The scope of this survey and conceptual understanding of CBCR is as follows

	Central Bank side	Market side
Purpose	◆ Monetary Policy	◆ Needs of funding, pledging, ensuring liquidity

Relationship diagram

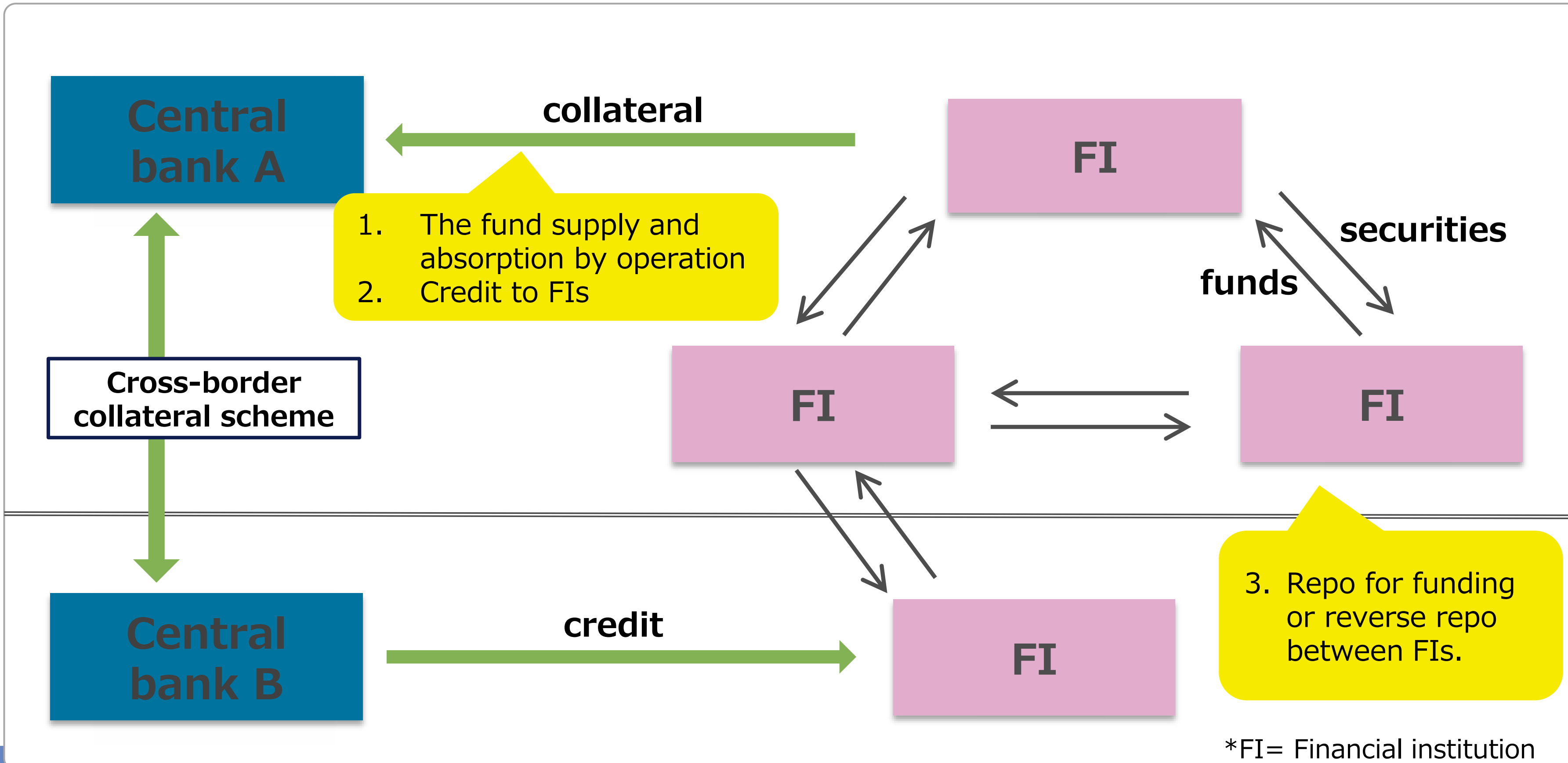


Conceptual understanding of cross-border collateral and repo business

■ The scope of this survey and conceptual understanding of CBCR is as follows

	Central Bank side	Market side
Purpose	◆ Monetary Policy	◆ Needs of funding, pledging, ensuring liquidity

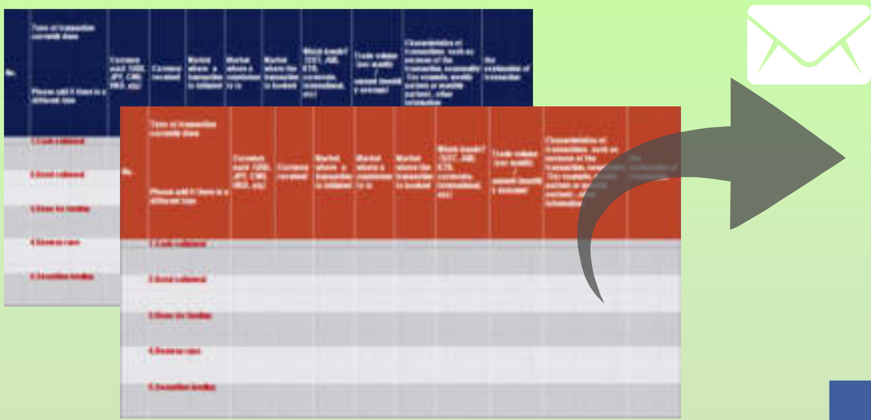
Relationship diagram



Survey findings

- We collected information through survey among ABMF and WG members.

1. Collecting information from WG members



2. Interviewing targeted FIs

Findings

1. Invisibility of transactions
2. Differences in legal arrangement represented in GMRA and CSA
3. Some possible transactions in the region

Fact Findings① Invisibility of transactions

■ Limited cross-border transactions

- CBCR transaction in the region is limited.
- Most of transaction are USD/UST, USD/JGB, USD/AGB.

■ Lack or fragmentation of information

- Identifying whether a transaction is repo or buy/sell is difficult because transactions are booked outside the region (e.g. London).
- It is not easy to trace CBCR because FI’s systems does not capture such data.

Difficult to capture current state of the market

- Market players may have psychological barriers to use CBCR because they can’t judge what they can or cannot do, with whom, and where.

➢ Invisibility of transaction may be a barrier for CBCR market.
➢ We need to gather further information to understand and validate possible transactions.

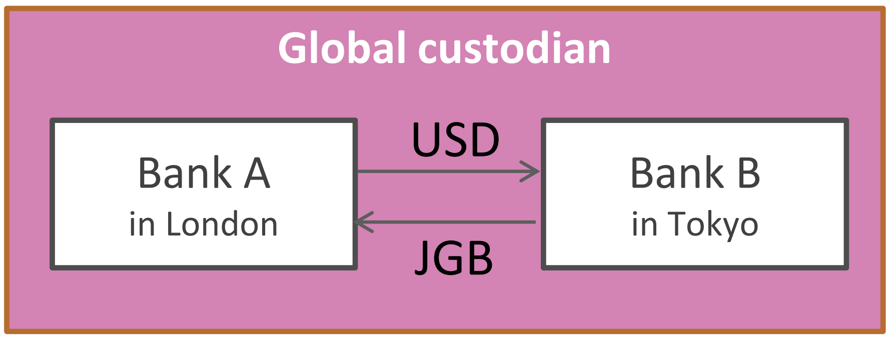
Fact Findings②:
Differences in legal arrangement

- Legal issues represented in Global Master Repo Agreement Country Annexes and Credit Support Annex.

- We suspect lack or limited confidence in legal framework and market practices of developing markets may be one of reasons why financial institutions can't accept LCY bonds in CSA, particularly for cross-border transactions.
- To change the situation, it is often recommended to changing domestic laws to meet international practices, but it is not easy.
- As domestic repo and collateral transactions expands, there will be more sound market practices in developing markets, which foreign FIs also participate. Then, we may be able to create common recognition that the differences in legal arrangements in Asia may be negligible or not as large as expected.

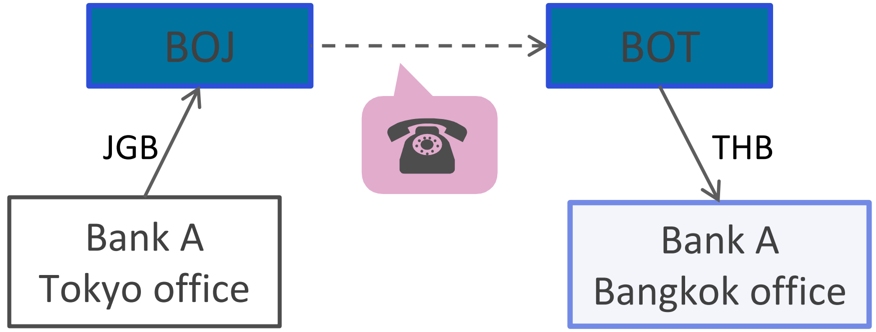
Fact Findings③:
Some possible transactions in the region [example]

Ⅰ Repo using USD

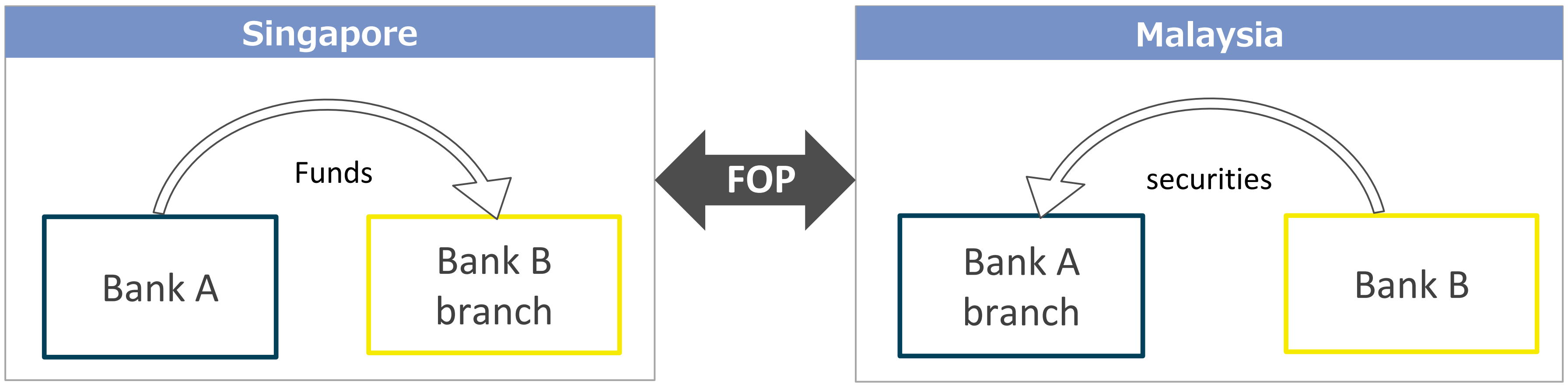


Ⅱ BOJ-BOT cross-border collateral

*This scheme has used in the case of emergency such as natural disaster.



Ⅲ Cross-border repo between Singapore and Malaysia



Proposals to create regional CBCR market

- Most of cross-border collateral and repo transactions are in USD/UST or limited currencies and bonds.
- Difficulty in accepting different legal framework and market practices seems to be the biggest hurdle for CBCR to be created in the region.
- Besides, demand for such cross-border transaction may not be large because cross-border transactions are mostly done by internationally active banks which have large operation in USD/UST.
- But regional CBCR needs to be considered if Qualified ASEAN Bank(QAB) is realized.
- To foster CBCR market in future, can we explore feasibilities of connecting each market with existing legal framework?
- Central banks may agree cross-border collateral for emergency, but can we make a similar arrangement for "peace time"?

(Proposed transaction models)

1. Cross-border repo or collateral in two transactions by local branches
2. Tri-party cross-border transaction
3. Cross-border collateral agreement by central banks
4. Cross-border collateral and repo via CSD-RTGS Linkages

1. Cross-border repo or collateral in two transactions by local branches

- Bank B's branch M provides credit to Bank A's M branch while Bank A N branch sells or pledges securities to Bank B's N branch.

Assumption

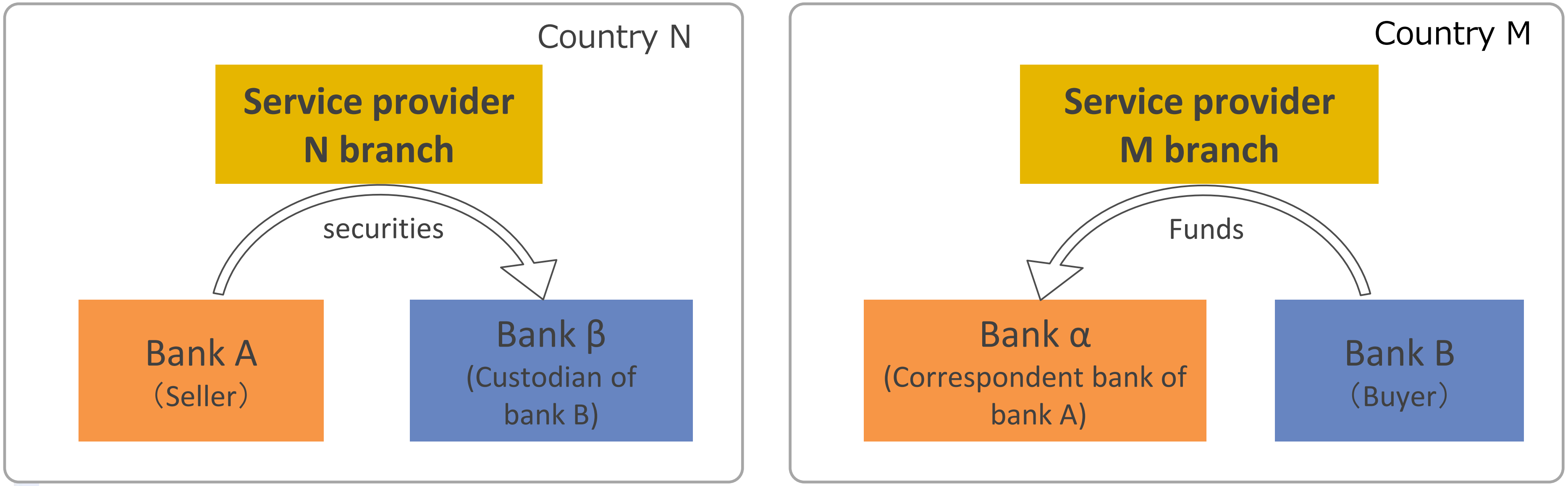
- Both Bank A and B have branches (or subsidiary) in the two countries concerned.
- Though sales of securities and provision of funds are two separate transactions, Bank A and B can agree to consider them as one.

2. Tri-party cross-border transaction

- Service provider provides tri-party repo service through local branches.

Assumption

- A service provider needs to have branch offices in each country.
- The service provider can provide custody service to banks in each markets
- The service provider will transfer funds in Country M in exchange for securities in Country N.
- Service provider needs to be permitted FOP transfers.



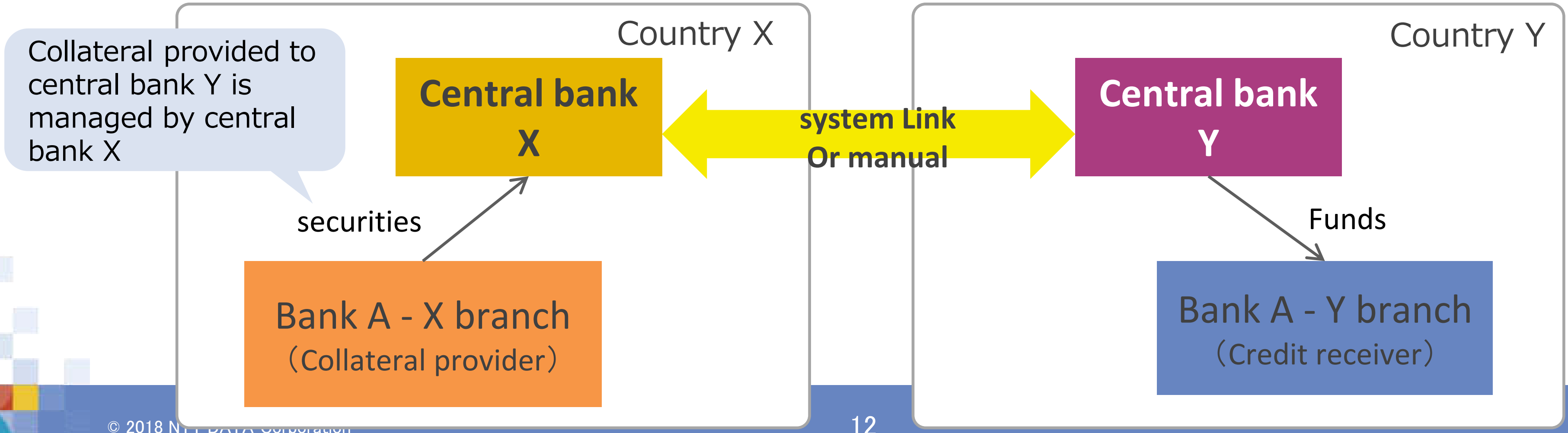
3. Cross-border collateral agreement by central banks

Tri-party transaction with central banks

- Like CCBM in Europe, banks can get local liquidity in another country by pledging home-country's securities to the central bank.

Assumption

- Central banks accept other country's securities as eligible collateral.
  - In emergency situation, some central banks have already agreed.
  - It is not clear to what extent central bank can accept other country's securities as eligible collateral in peace time.

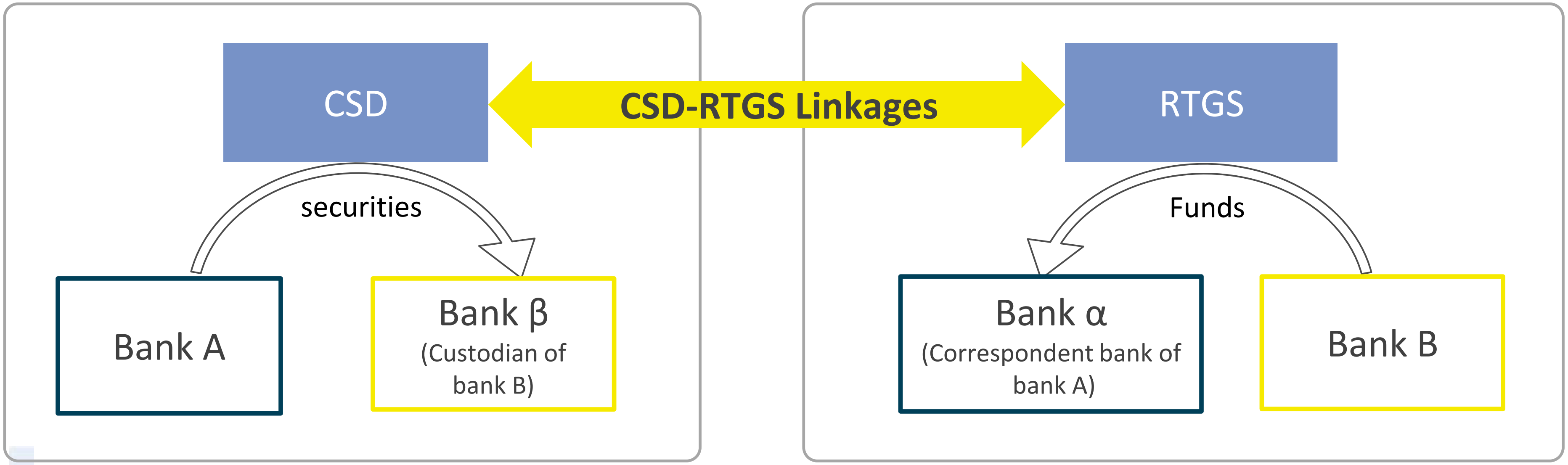


4.Cross-border collateral and repo through CSD-RTGS linkages

- CSD-RTGS Linkages will provide DVP
- The Linkages can accommodate increase in demand for cross-border collateral by central banks.

Assumption

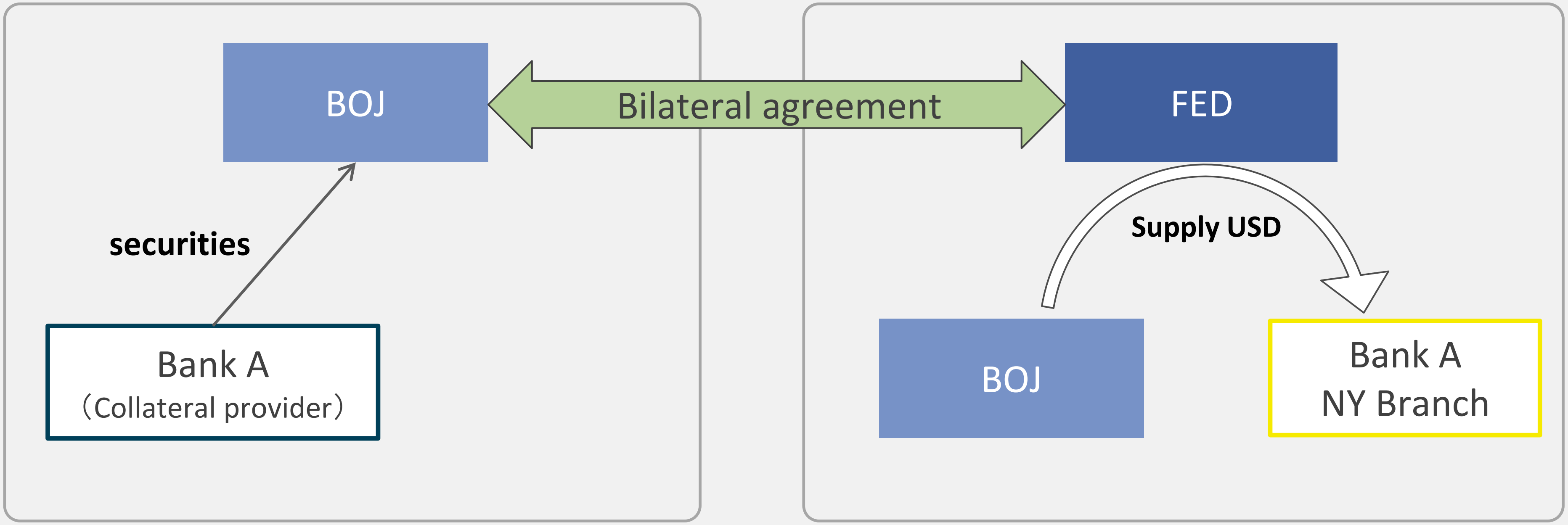
- Demand for DVP is high because settlement risks is high.
- Demand for DVP is high because it reduces counterparty risks
- Central banks accept other country's securities as eligible collateral.



Supplementary information :
Another way of supplying fund

Note

- The model of U.S. Dollar funds-supplying operations by BOJ is as follows.
⇒The fund supplier is BOJ .



Next steps

- Further fact finding
  - potential demand
  - Potential service providers
- Identification of legal issues related with CSA
- Identification of barriers which may impede the proposed transaction models
- Identification of legal gaps in each market which affects CSA

Global IT Innovator

NTT DATA Group

Thank you.

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Expanded Use of Collateral for Trust-Building in Asia:

“Inclusive Collateral” as the Catalyst for Asian Bond Market Development

Gongpil Choi

KIF & Asian Prime Collateral Forum

APCF

Snapshot of Asia's Financial System

1. Bank-dominant financial system

- Serious regional efforts, including ABMI, CMIM, and AMF, to develop capital market after the Asian financial crisis, but only limited progress

2. Efficient centralized legacy System / US centric global financial system

- Keep on doing things without changing structural parameters

3. Dislocated from global trends (Periphery): No significant market infrastructure for diverse market participants

- Significant entry barrier and a lack of incentives to do something different

Limits of Fiat Trust

"Safe asset" is a stricter definition of prime assets, HQLA.

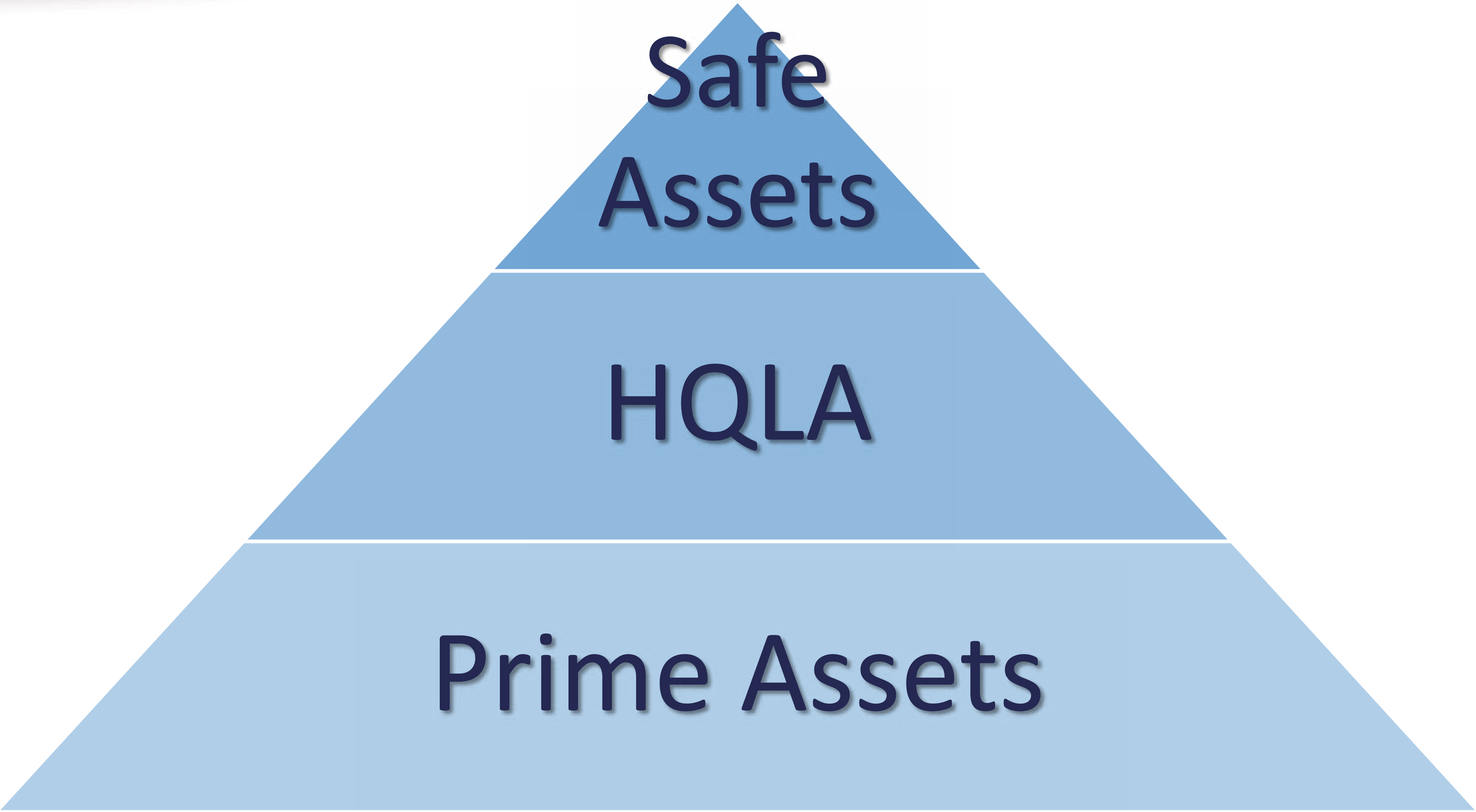
A broader definition of safe assets would include debt securities issued by supranational agencies, some quasi-sovereign entities and local governments.

Even "safe Asian assets (except for JGB)" cannot be taken as collateral for cross-border transactions

Trust among member countries is limited and hindered. No regional governance (except for ASEAN+3) to promote this.

No official arrangements other than ABMI to make serious efforts going forward

The new supply and demand dynamics for safe assets point toward a steady increase in demand and a decrease in global supply.


Safe
Assets
HQLA
Prime Assets

Four Main Functions of Safe Assets (IMF)

1. Reliable store of value	2. Safe collaterals in repurchase and derivatives markets
3. Benchmarks to measure the relative risks of other assets	4. Ingredient to the prudency framework for banks

Global demand for safe assets related with emerging economies (domestic lack of savings vehicle, regulatory reform)
Supply of safe assets (bank deposits decline, private label debt via securitization of risky assets, Treasuries increase).

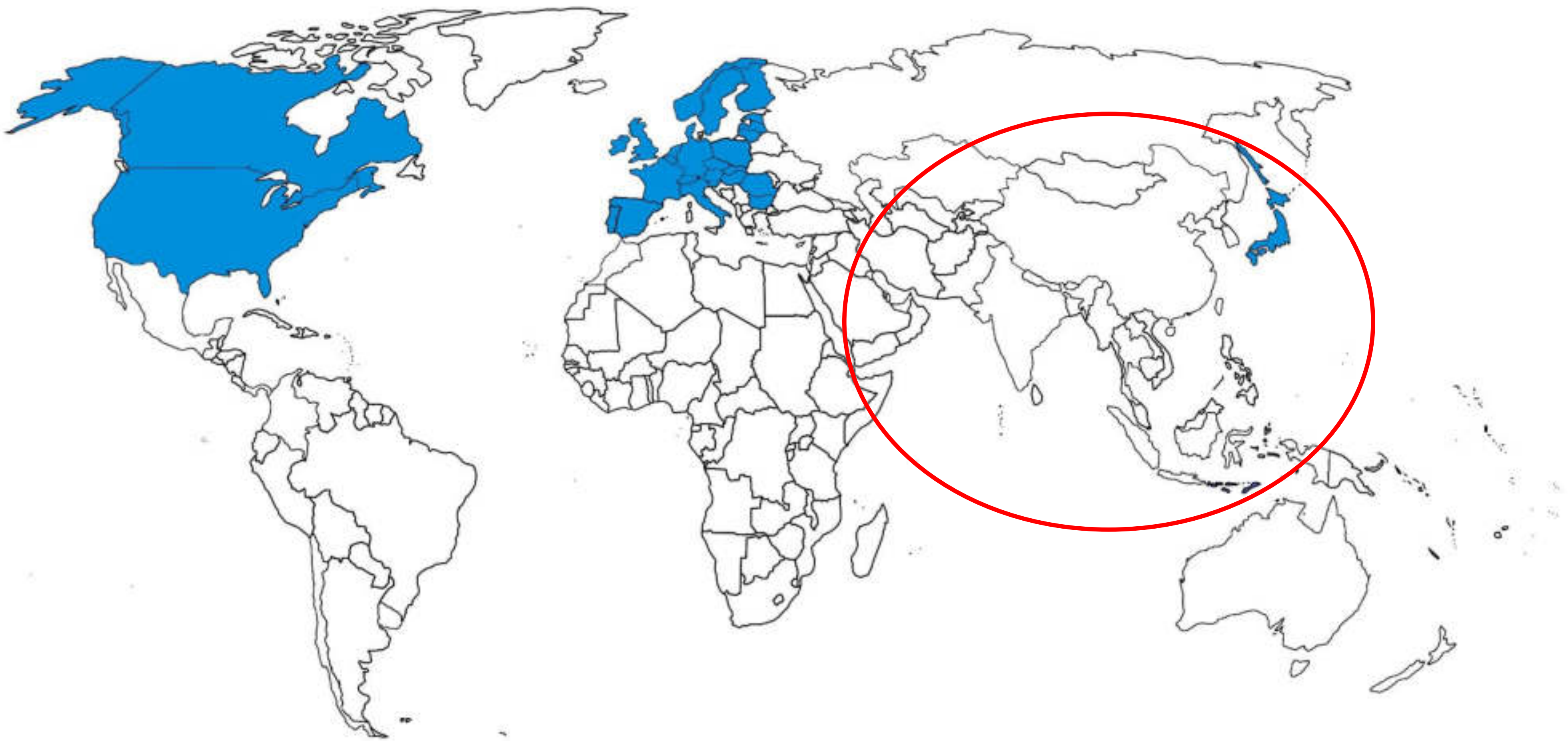
Credit-ratings of the Asian Government Bonds and Others

Over BBB- (ECB standard)

Source: Trading Economics

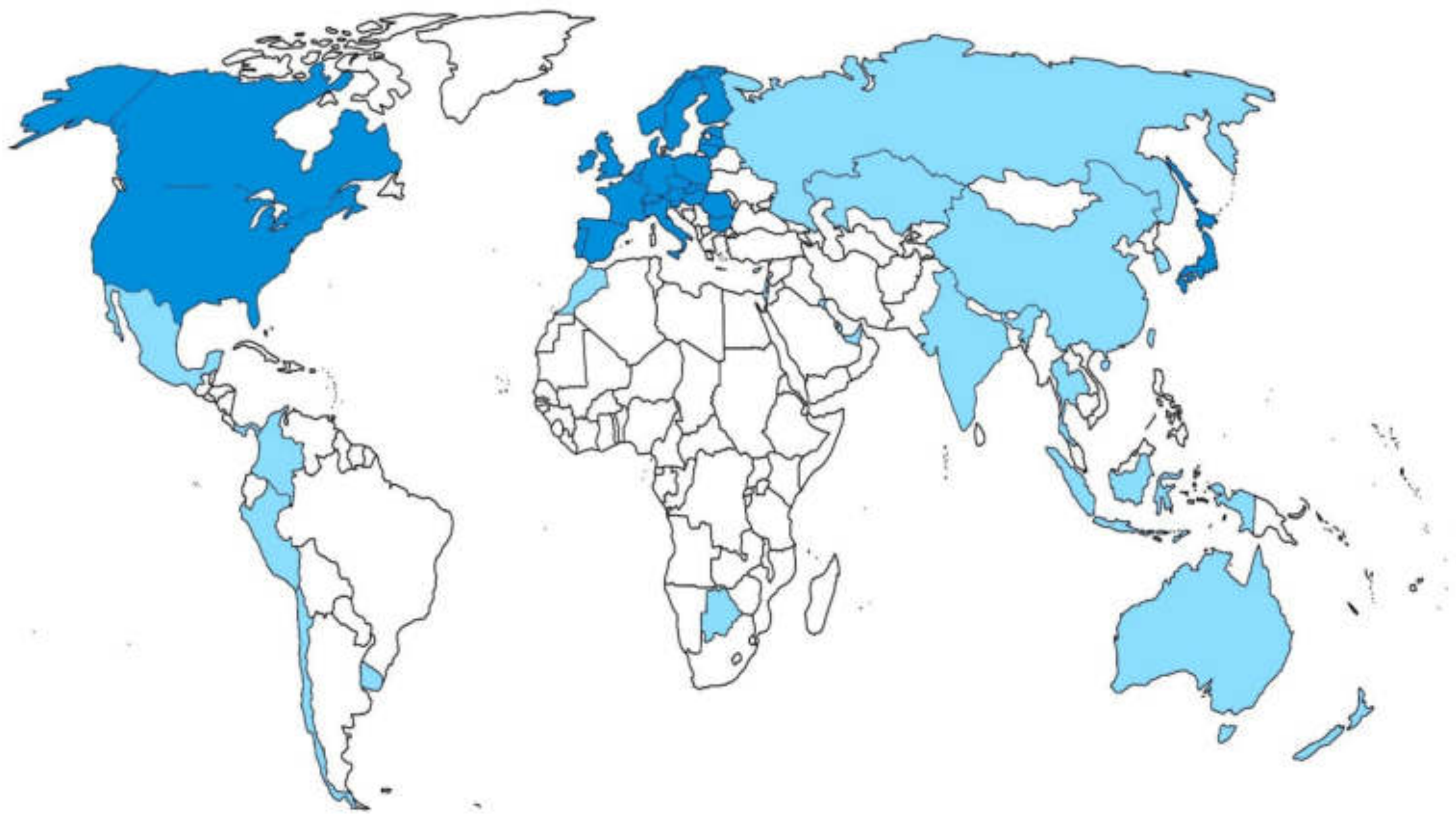
Cross-border Pledgeability of Asian Collateral

Only JGB is accepted



Source: ECB (2018)

Difference between Pledgeability and Credit-ratings



Pledgeability   credit rating over BBB- (ECB standards)

Europe	Credit Rating
Andorra	BBB
Austria	AA+
Belgium	AA+
Bulgaria	BBB-
Cyprus	BBB-
Czech Republic	AA-
Denmark	AAA
Estonia	AA-
Finland	AA+
France	AA
Germany	AAA
Hungary	BBB-
Iceland	A
Ireland	A+
Italy	BBB
Latvia	A
Liechtenstein	AAA
Lithuania	A
Luxembourg	AAA
Malta	A-
Netherlands	AAA
Norway	AAA
Poland	A-
Portugal	BBB-
Romania	BBB-
Russia	BBB-
Slovakia	A+
Slovenia	A+
Spain	A-
Sweden	AAA
Switzerland	AAA
United Kingdom	AA

Australia	Credit Rating
Australia	AAA
New Zealand	AAA

America	Credit Rating
Aruba	BBB+
Bermuda	A+
Canada	AAA
Chile	A+
Colombia	BBB-
Mexico	BBB+
Monterrat	BBB-
Panama	BBB
Peru	BBB+
Trinidad and Tobago	BBB+
United States	AA+

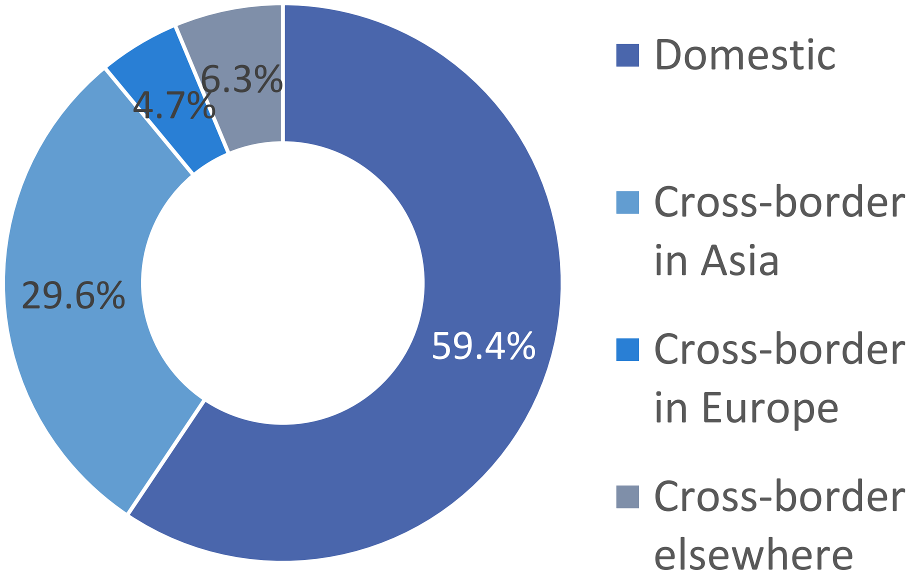
Asia	Credit Rating
China	A+
Hong Kong	AA+
India	BBB-
Indonesia	BBB-
Israel	AA-
Japan	A+
Kazakhstan	BBB-
Kuwait	AA
Malaysia	A-
Philippines	BBB-
Qatar	AA-
SaudiArabia	A-
Singapore	AAA
South Korea	AA
Taiwan	AA-
Thailand	BBB+
United Arab Emirates	AA

Africa	Credit Rating
Botswana	A-
Morocco	BBB-

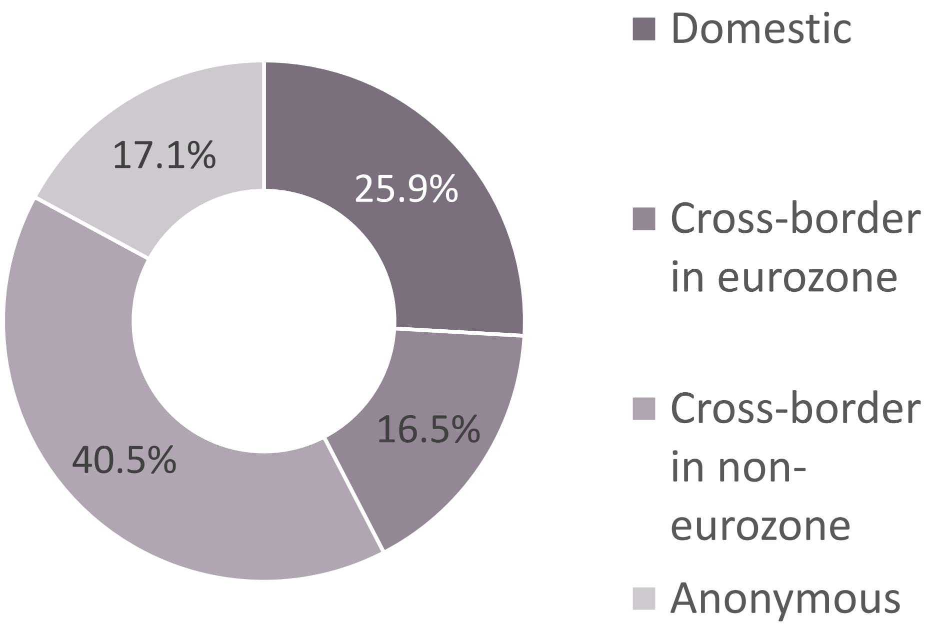
Source: Trading Economics

Geographical Analysis of Collateral Exchanges in Asia and Europe

Within Asia



Within Europe



Source: ASIFMA and ICMA (2017)

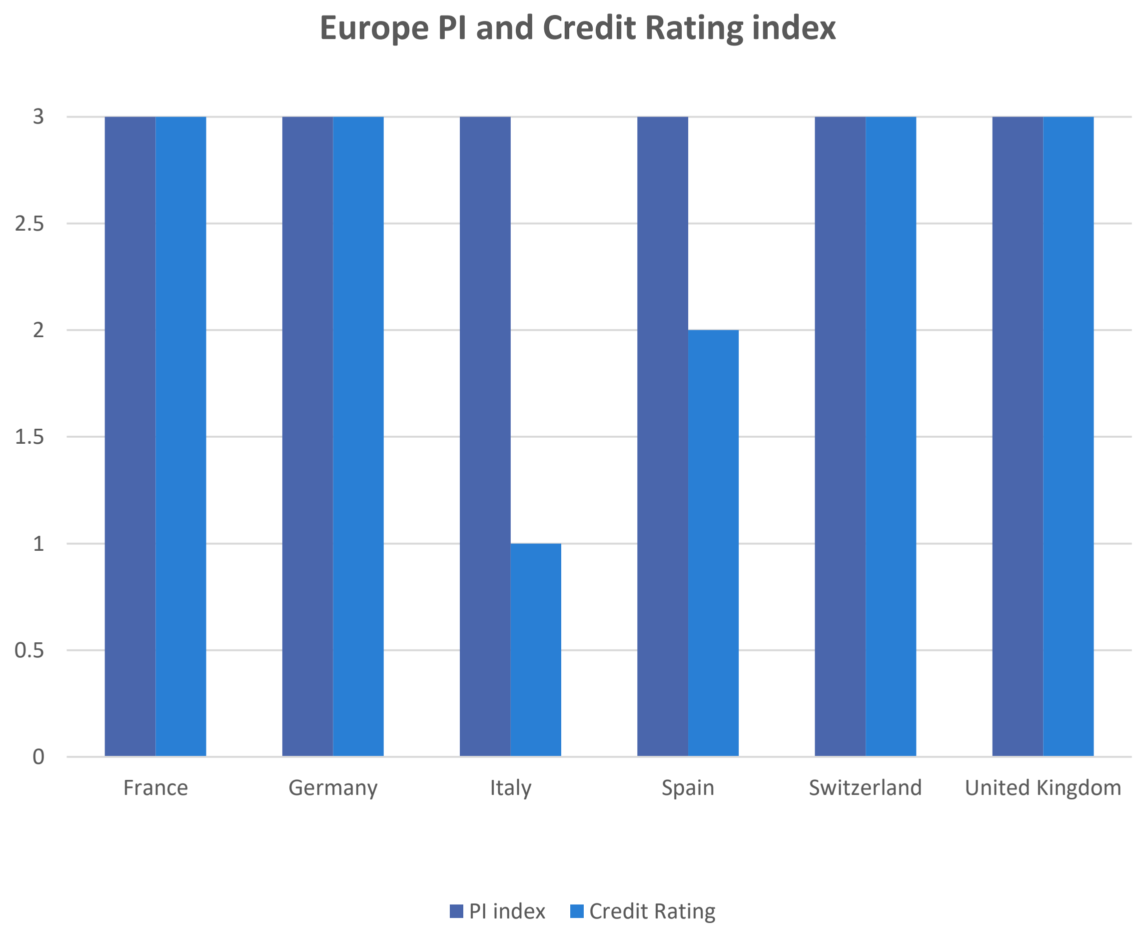
Italian Bonds as Collateral?

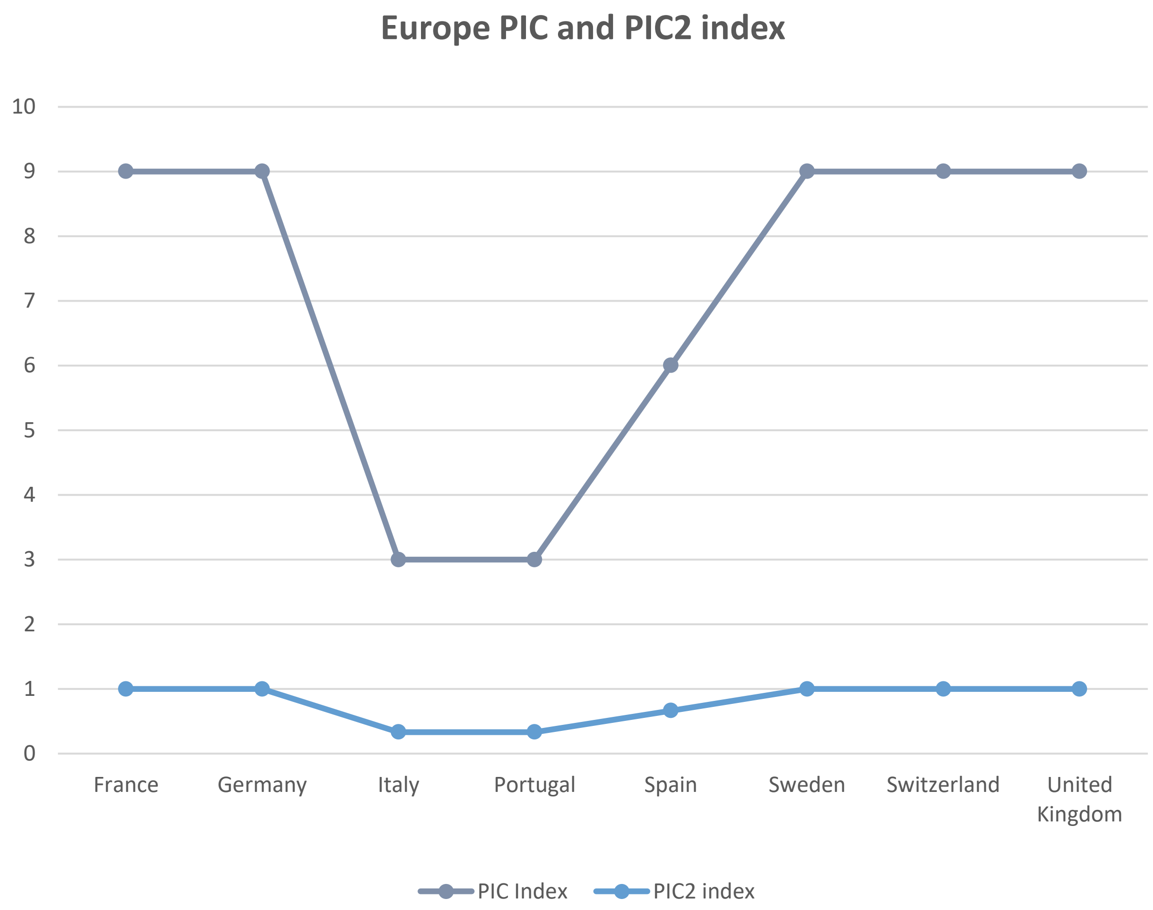
The share of government bonds within the pool of EU-originated fixed-income collateral

Country	Credit Rating	Share
Germany	AAA	19.6%
United Kingdom	AA	13.7%
France	AA	13.2%
Italy	BBB	**11.7%**
Spain	A-	5.5%
Belgium	AA+	3.0%
United States (Treasuries)	AA+	4.6%
Japan	A+	3.3%

Country	Credit Rating	Share
China	A+	**0% (Ineligible)**
Hong Kong	AA+	
Malaysia	A-	
Singapore	AAA	
South Korea	AA	
Taiwan	AA-	

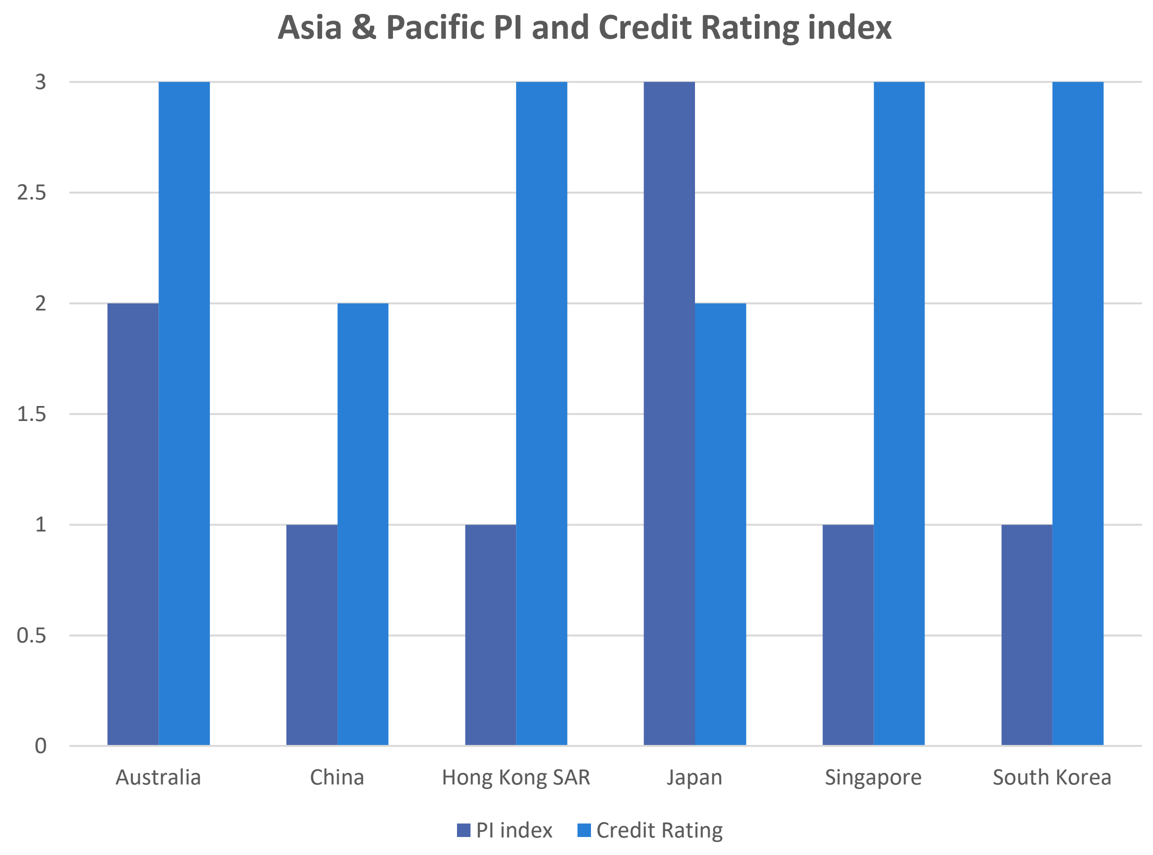
Source: Trading Economics & ICMA (2017)

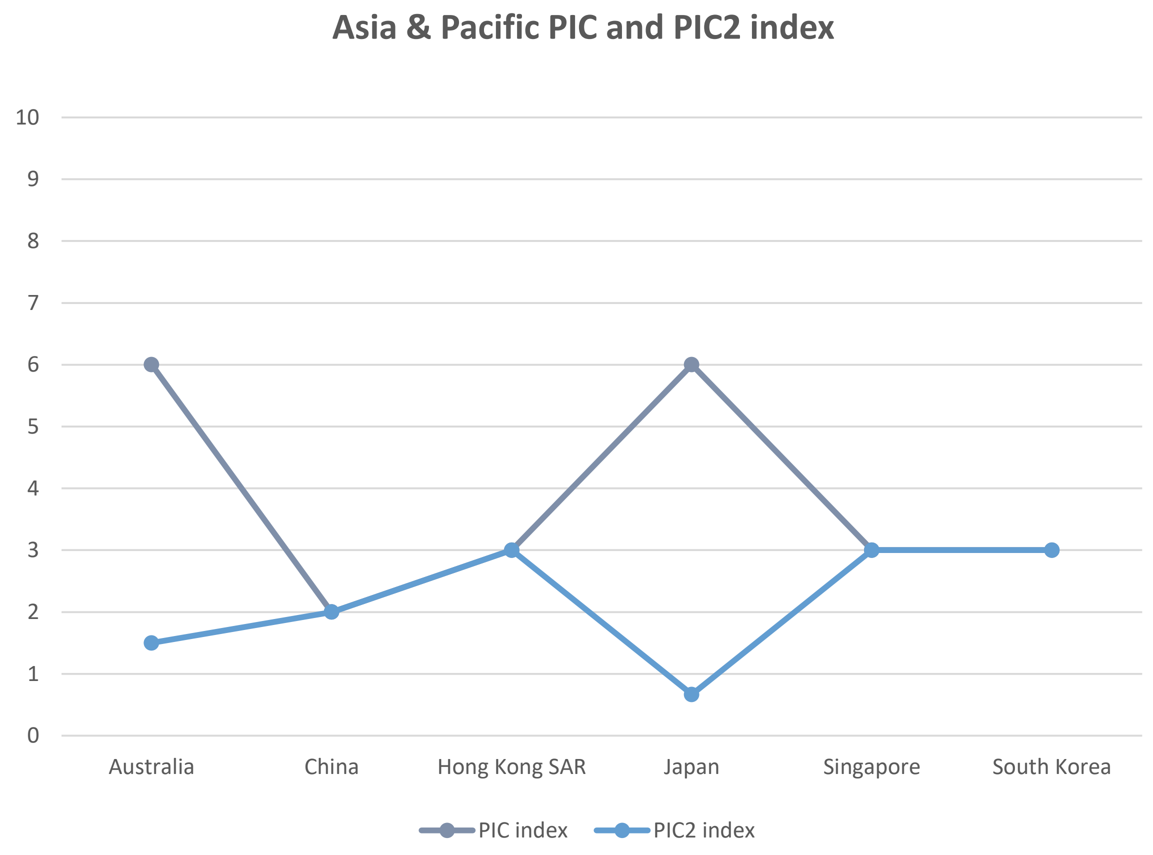




- **PI Index:** non-pledgeable = 1, narrowly pledgeable = 2, pledgeable = 3
- **Credit rating:** credit rating under BBB+ =1, credit rating A = 2, credit rating over AA = 3
- **PIC Index** (Total pledgeability) = PI*Credit rating / **PIC2 Index** (Gap Indicator) = Credit rating / PI

Source: ECB(2018) and Trading Economics (as of Jan 2019)


Asia & Pacific PI and Credit Rating index
3
2.5
2
1.5
1
0.5
0
Australia
China
Hong Kong SAR
Japan
Singapore
South Korea
PI index
Credit Rating


Asia & Pacific PIC and PIC2 index
10
9
8
7
6
5
4
3
2
1
0
Australia
China
Hong Kong SAR
Japan
Singapore
South Korea
PIC index
PIC2 index

Collateral Supply < Collateral Demand

Supply concentrates on Re-use rather than including eligible assets

Safe asset shortage is not about heavier re-use or better infrastructure

Safe asset shortage is about a lack of inclusiveness and coherent eligibility framework

If Asian collateral comes into collateral equation,

Asia would enjoy sustainable growth with financial stability

Something Wrong with Global Collateral Supply

Persistent gap needs to be addressed

Re-use would not solve it!

Tokenization is a leap-frogging with no real base

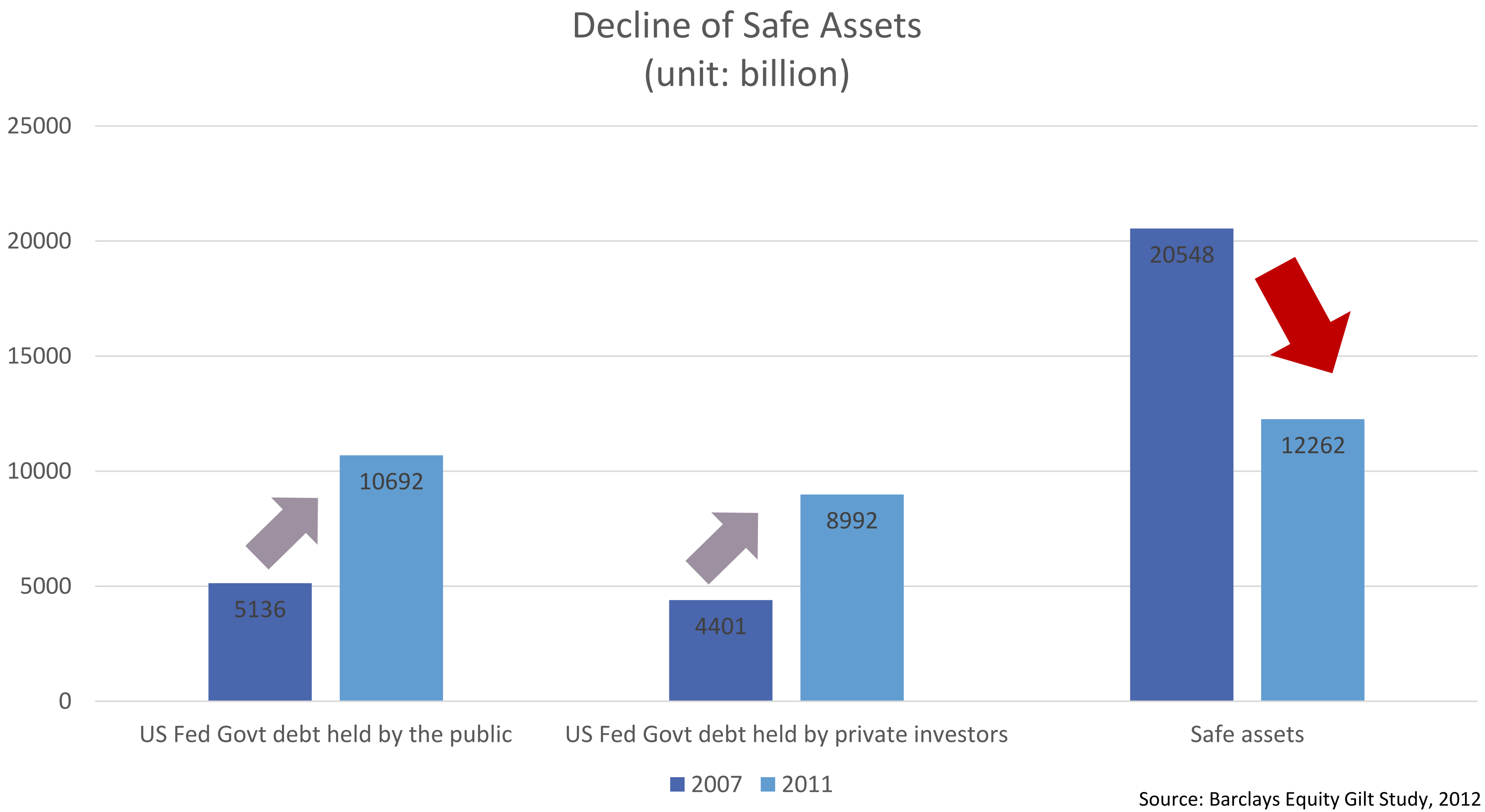
It has to be rigged on tax base of good prime assets

Asian prime assets are the best choice for globally-pledgeable collateral

Safe Asset Shortage due to very limited supplier (US, Euro)

- **ZLB interest** cannot work in negative interest territory
  - Recession results because quantity equilibrium was reached
  - Artificial demand for safe assets
- **Equity premium:** widened even with interest rates going down
  - Shortage of ”safe” assets explains the gap
  - Inflationary expectation forward guidance
  - The global financial system runs on a narrowly defined collateral based assets (Trust) and remains unstable
- **Safety Trap**: Securitization externality that leads to under-provision of safe assets
  - Decentralized crypto assets can ease the shortage of safe assets over time if there is no contribution from Asia

Any chance Asia can be safe asset supplier?



Source: Barclays Equity Gilt Study, 2012

Any chance Asia can be safe asset supplier?

- If we consider safe assets to be central government debt securities rated no lower than AA category, sovereign downgrades reduced the supply during the crisis euro denominated safe assets 5.2 trillion euro in 2010 to 3.5 trillion in 2012

- US Treasury is the primary supplier of safe assets, accounting for 45% of government securities AAA-AA among vehicle currency countries. Ratings unchanged, US Treasuries net issuance USD 1.6 trillion in 2010 to USD 687 million in 2015

- Before the global financial crisis in 2008, private AAA filled the gap with devastating results

Asian prime assets are much safer and have better quality than private labels

Ultimate point is not the lack of safe assets,

but the narrowly defined and poorly utilized

Asian assets as collateral.

APCF

Poorly defined, vaguely recognized, and passively managed Asian collateral resources

Anemic cross-border activities	Low market liquidity
High proportion of government collateral in repo market	Disparate/non-existent criteria on prime collateral in the region

Where Do We Start? Improve Cross-Border Pledgeability

Start from the Base “COLLATERAL”

- Catalyst for market liquidity and profit
- Building Blocks for trust building
- Lower initial entry level of counterparty risk

Eligibility of the Pledgeable Asian Collateral

1. What can be eligible as collateral?

- Government bonds, MBS, covered bonds, and prime corporate bonds, digital assets, etc

2. The FX risk is regarded as the barrier

- Limited cross-border repo transactions because of the lack of trust and infrastructure

3. However, markets have all sorts of risk mitigants and transformation services

- Hair-cuts, margin requirements in repo, hedging instruments and derivative transactions

4. True problem is our silo-ed mindset and fragmented regulatory framework

How? Get away from Improving on Trodden Path!

Three stages to develop Asian bonds as pledgeable collateral for cross-border transactions

Identify eligible assets for broader recognition

vs.

Improving existing market infrastructures

Utilize the expanded pool for cross-border transactions via strong market incentives

vs.

Emphasizing re-using and greasing the existing wheels

Seek diversity and openness in collateral operations

vs.

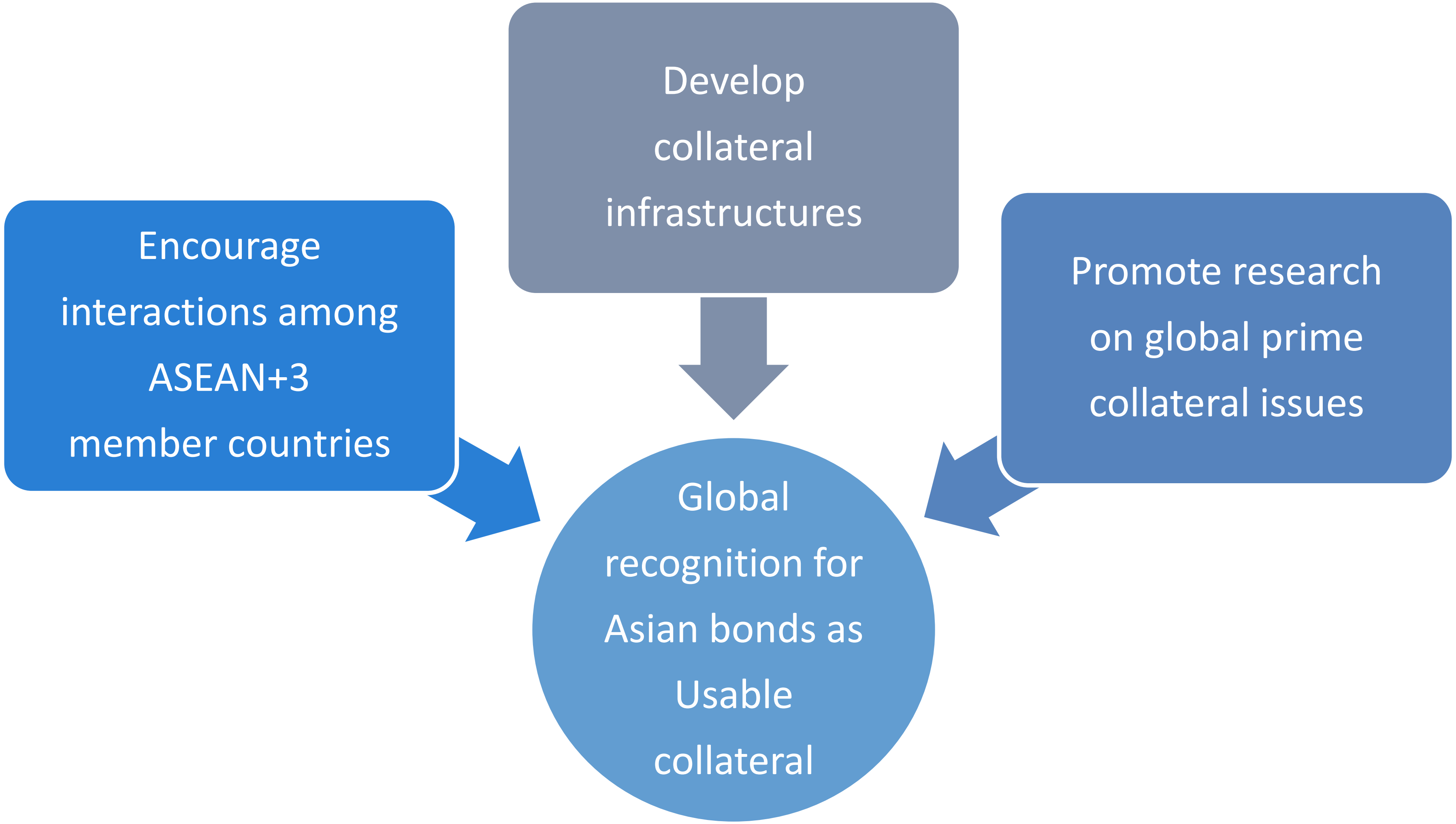
Rely on legacy players and outsource resources

Future Infrastructure: Implementation of RTGS on DLT
Decentralized, Distributed Architecture to avoid Single Point of Failure

1. Due to the advent of Distributed Ledger Technology (DLT), it is inevitable to re-organize the existing Real-Time Gross Settlement (RTGS) system
2. Improvement in the system is vital to make better use of Asian prime collateral
3. The existing eligibility criteria must be re-examined to take the Technological development into account
4. It is urgent to establish comprehensive criteria on Private Trust Machine
5. Implementing a RTGS on DLT requires us to re-examine the existing eligibility criteria. This would give Asia a better chance to prepare for the future

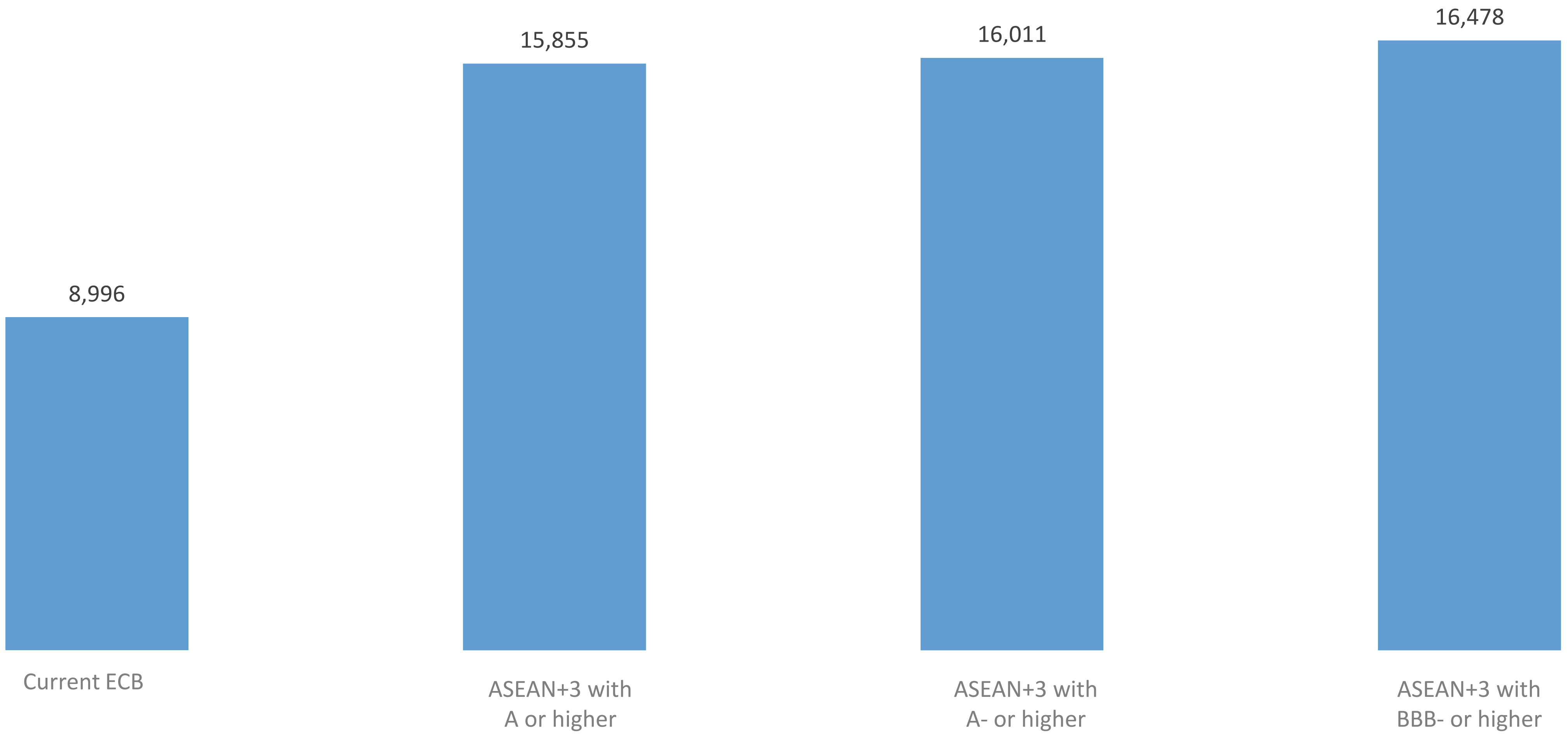
Asian Prime Collateral Forum (APCF)

Catalyst for Studies on Pledgeable Collateral



Possible Size of Collateral with the inclusion of ASEAN+3 bonds

(Unit: billion USD)



Source: ECB, Eurosystem Collateral data; Asian Bonds Online (2017)

APCF

Economic Impact of Developing ASEAN+3 Regional Collateral Pool

1. Enhanced Financial Stability	2. Improved Market Liquidity	3. Accelerated Capital Market Development

- Stabilization costs can be reduced
- Reduced dependency on FX reserves and swap arrangement
- Financial stability can be enhanced **without outsourcing regional financial resources**

Conclusion

The world is changing fast.
Our system is centralized and cannot identify and respond properly.
We come to witness decentralized alternatives
Unlocking the Value of Cryptocurrencies = Digital Assets as Loan Collateral

What we need is a new source of trust.
That new trust is prime collateral from Asian nations.
Crypto collateral needs to be attached with expanded prime collateral.
Expanded trust based on expanded collateral could evolve into a new financial system
– More distributed and decentralized!

Asian prime collateral needs to be given renewed recognition via wider acceptance.
Eventually, cryptos and other assets will be exchanged freely on a global platform.
Otherwise, Asian collateral would not exist,
and our value creation would entirely depend on borrowed system

Wrapping up,

- **Wider market consensus-building** to engage more in various transactions
- **Official recognition of pledgeable collateral** to encourage more active participation of member countries
- **Harmonized tax treatment and other regulatory incentives**
- **Open exchange platform and inclusive market infrastructure**
- In-depth studies and forward-looking leadership

CCDC Collateral Management Service

China Central Depository & Clearing Co., LTD.

FEI TAO

Collateral Management Center

CONTENTS

目录

01

PART ONE

Overview of CIBM

Overview of CIBM

2005

- Asian Bond Fund II (ABF II), the first overseas institution allowed to invest in the CIBM
- First panda bond issued

2010

Three types of institutions allowed to trade and settle bonds in the CIBM

2011

HK-based RQFIIs given access to the CIBM

2013

RQFIIs across jurisdictions and QFIIs allowed to access the CIBM subject to application

2015

Foreign central banks and equivalents allowed to invest in the CIBM without approval requirement or quota limits

2016

Scope of eligible overseas investors to the CIBM further expanded

2017

Bond Connect

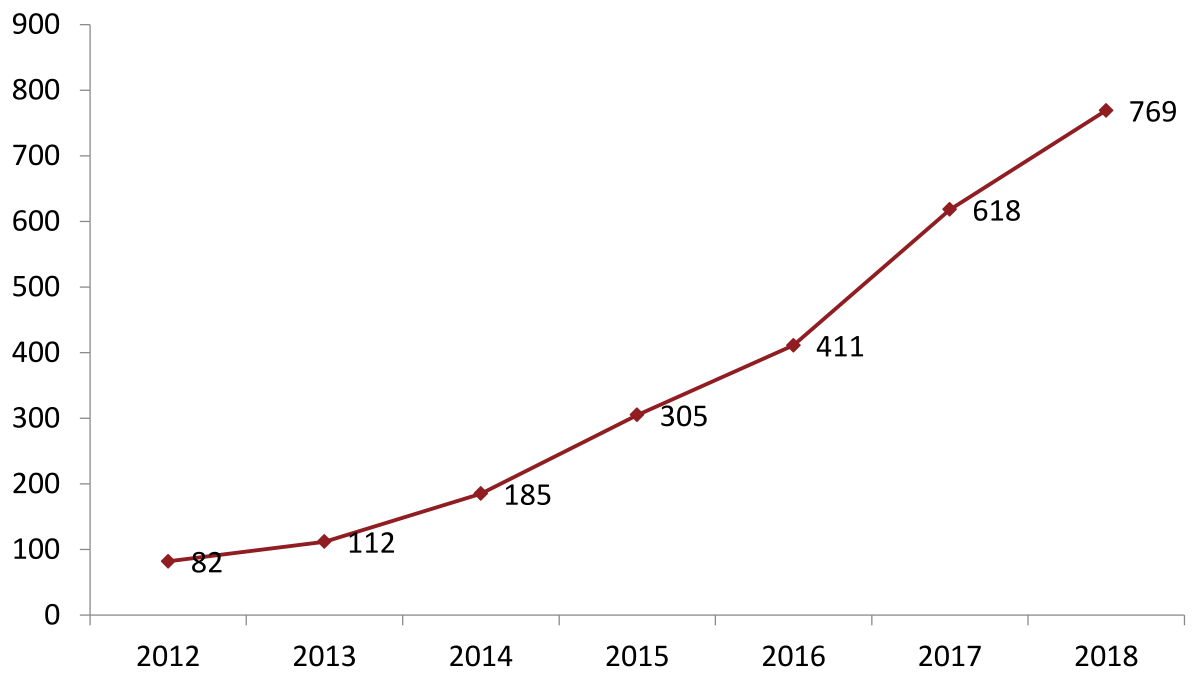
2018

- Restrictions on QFIIs & RQFIIs all removed
- Registration procedures for overseas investors to access the CIBM further simplified

Overview of CIBM

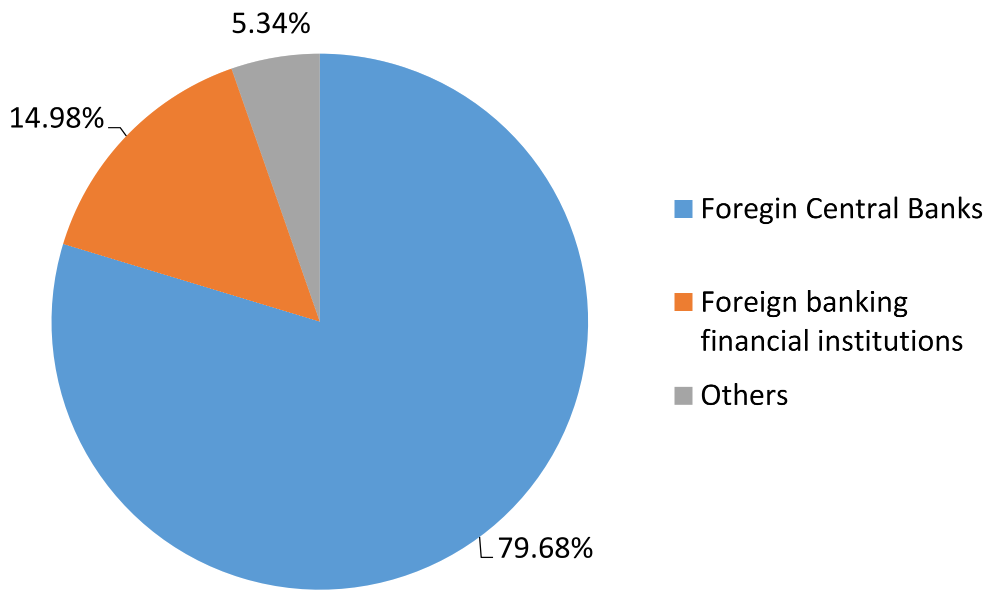
中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

Number of accounts of foreign investors（by end of 2018）



Data Source： CCDC

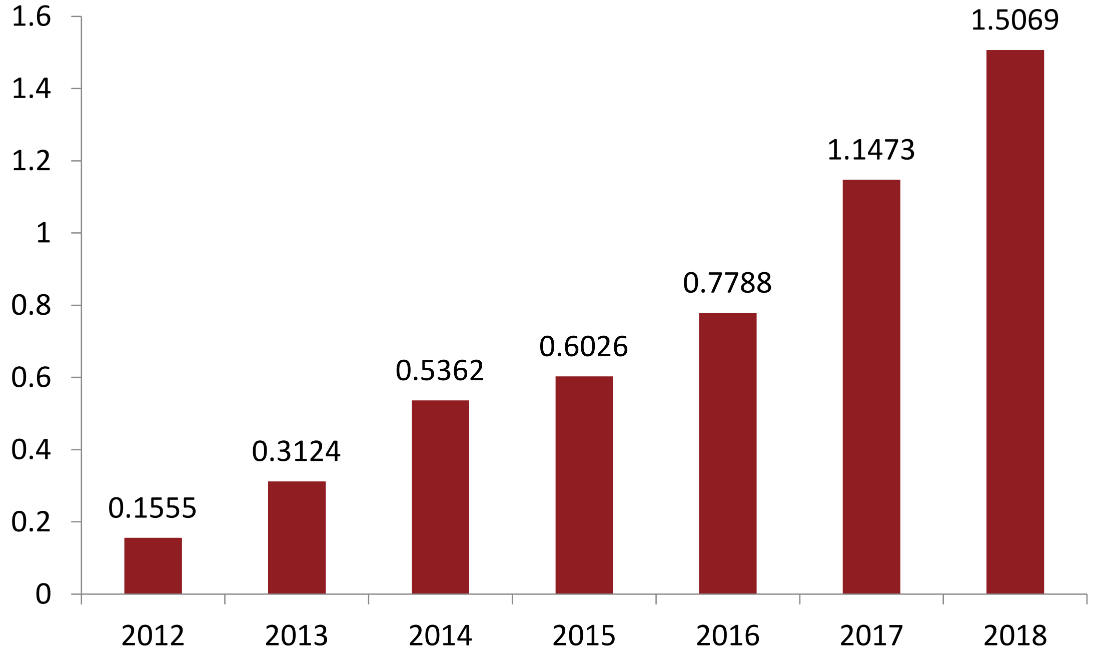
Composition of investors in CIBM （by bond holding, Nov 2018）



Overview of CIBM

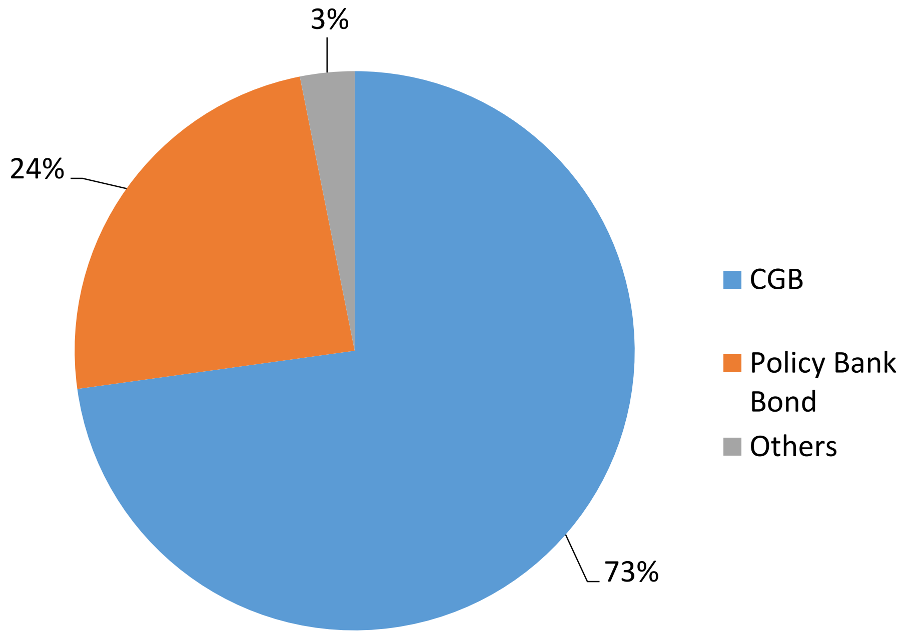
中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

Bond holdings of overseas investors (in trillion RMB)



Data Source： CCDC

Composition of overseas investors' bond holdings



02

PART TWO

Application of Bond Collateral in China

Application of Bond Collateral in China

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

2006

Studied both the global best practice and domestic market needs;

And based on that, designed our system structure

2011

The bond collateral management system went live;

Initiated pledged agreement deposits with Postal Savings Bank in June

2013

Started to provide services for repo, bond lending and other bilateral market transactions after the release of the new Master Repurchase Agreement;

Started to provide service for various re-lending monetary policy operations of the central bank.

2015

In January, initiated the business of using treasury bonds as futures margin, and extended services to the derivatives market;

Provided services for local pension funds and national social security funds.

2016

In June, formally set up a service center in Shanghai.

The business of using bonds as margin for gold trading was formally launched;

In December, CCDC supported Bank of China in issuing the offshore "green covered bond"

2017

Support overseas loans under domestic pledge

Support currency swap transaction between domestic commercial banks and foreign central banks

2018

Provide service for credit management of financial institutions

Preparing to start tri-party repo service

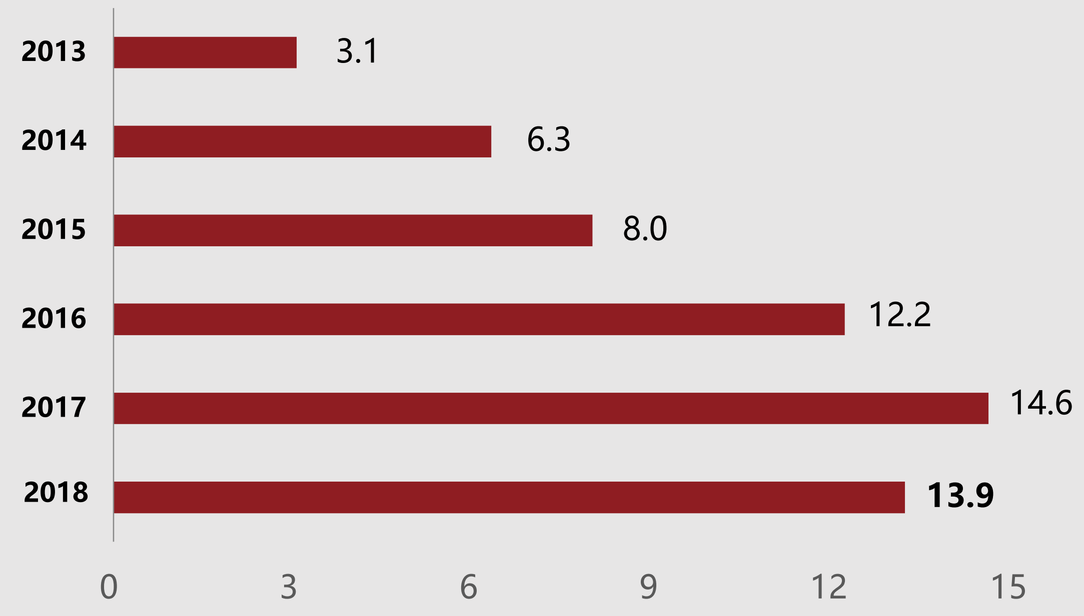
Application of Bond Collateral in China

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

Field	Balance	Ratio
China Bond Market	76.45	100%
Bonds deposited in CCDC	57.62	76%
Bonds pledged in CCDC	13.90	18%

Unit : Trillion RMB

Collateral under the management of CCDC (in RMB trillion)



Application of Bond Collateral in China

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

We provides services to **5924** market institutions

中国人民银行
THE PEOPLE'S BANK OF CHINA

中华人民共和国
财政部
Ministry of Finance of the People's Republic of China

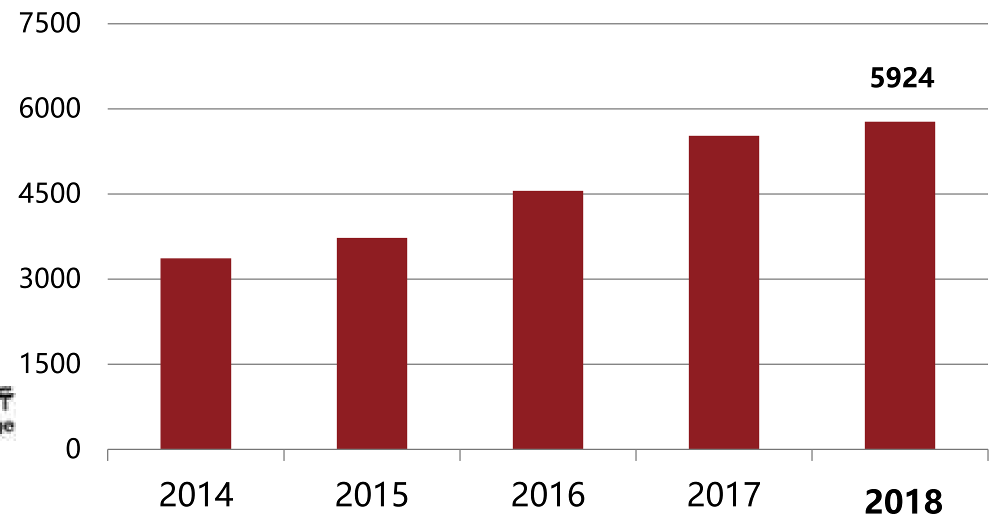
SAFE
国家外汇管理局
State Administration of Foreign Exchange

SSF
全国社会保障基金理事会

SGE 上海黄金交易所
SHANGHAI GOLD EXCHANGE

中国金融期货交易所
China Financial Futures Exchange

Number of clients of Collateral Management Center



03

PART TWO

Use of RMB Bonds in Cross-Border Business

Market Level: Active Cross-Border Trades Create Solid Demand for Collateral Services

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

China's position in the global investment landscape has been steadily enhanced.

Since this year the cross-border use of RMB has

exceeded RMB 10 trillion

Market Level: Active Cross-Border Trades Create Solid Demand for Collateral Services

中央国债登记结算有限责任公司
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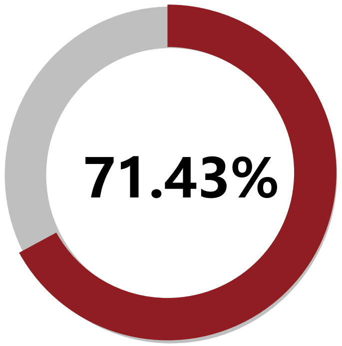
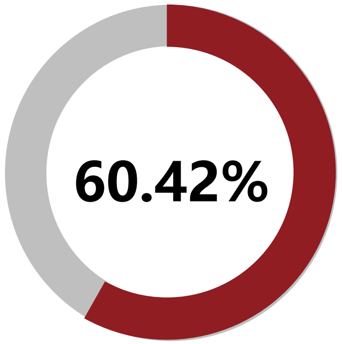
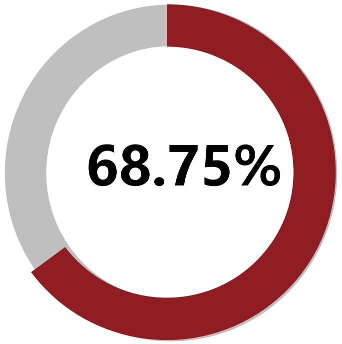
Recent feedback from Foreign Investers



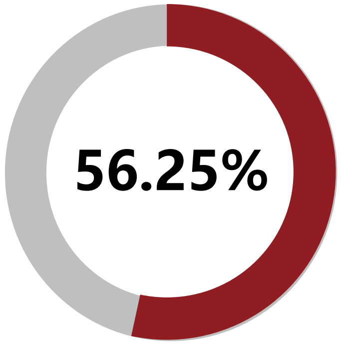
Willing to accept RMB bonds as eligible collateral in the global financial market



Looking forward to linkage between local CSDs with ICSDs for cross-border collateral management



Willing to use offshore bonds as collateral for exposures in China

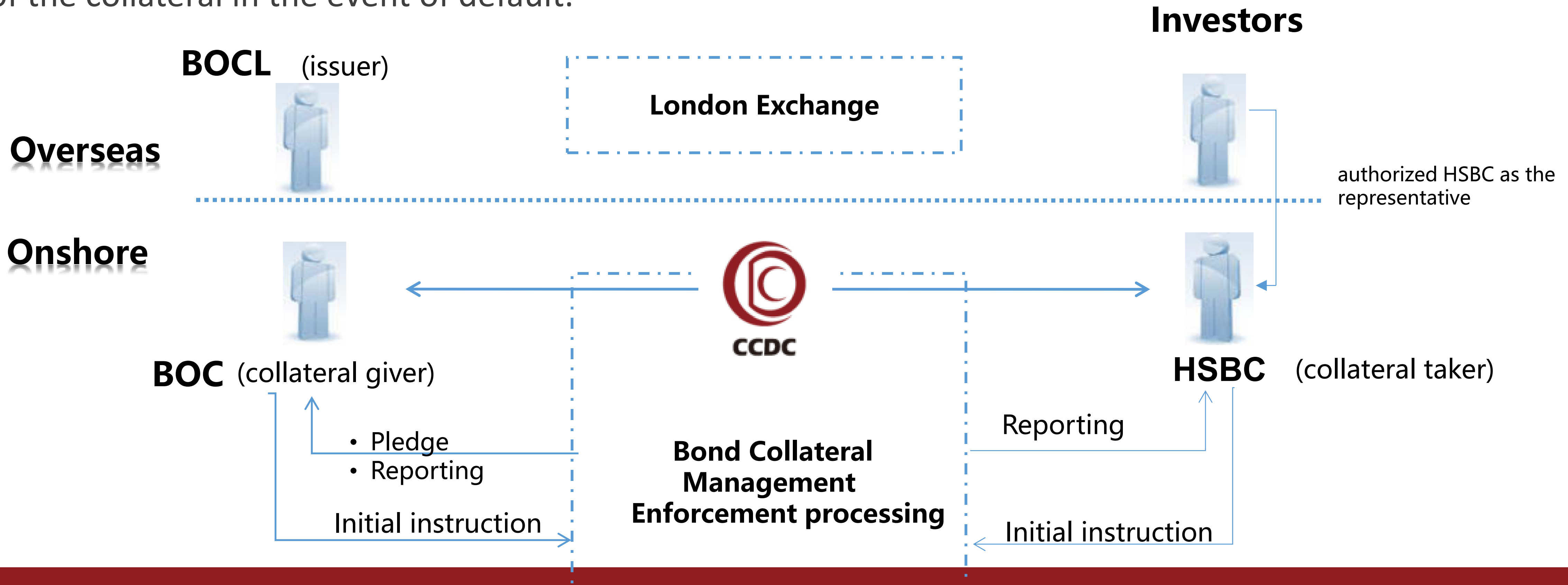


Looking forward to cross-border mutual recognition and use of collateral to increase value of bond holdings

Business Level: Abundant Innovations Pave Way for Best Practice

Support Overseas Issuance of BOC Green Covered Bonds

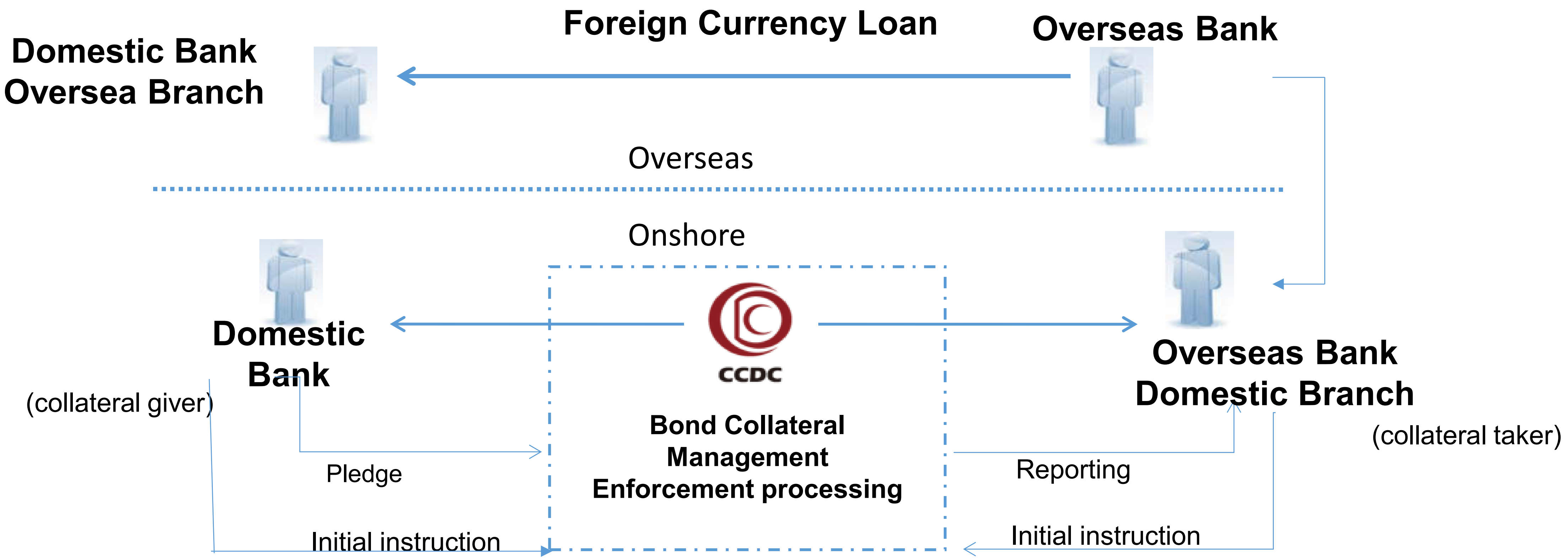
BOC used its green bonds as collateral to guarantee its issuance of overseas bonds. CCDC, as the collateral management provider, carried out the valuation, mark-to-market and assessment of the pledged assets pool. Meanwhile, CCDC acted as an executing agent to perform the default operation of the collateral in the event of default.



Business Level: Abundant Innovations Pave Way for Best Practice

Support Overseas Loans under Domestic Pledge

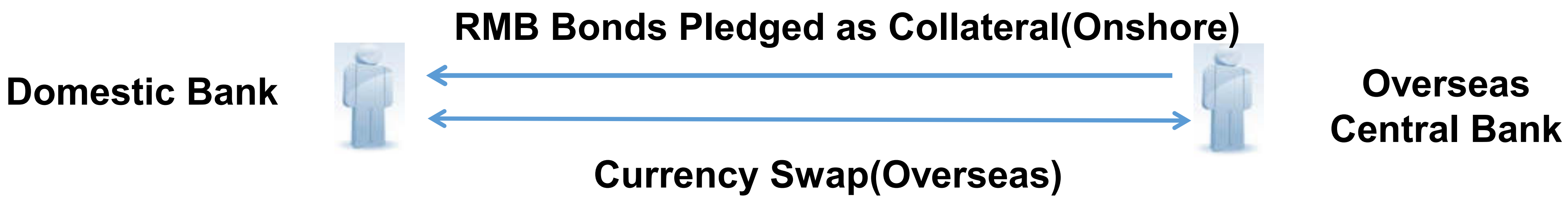
In order to control risk, overseas banks prefer to offer FCY loans to domestic banks secured by domestic bank's RMB bonds. CCDC plays the role of collateral management service provider, accomplishing bond pledge and regular reports.



Business Level: Abundant Innovations Pave Way for Best Practice

Support Currency Swap Transaction Between Domestic Commercial Banks and Foreign Central Banks

To control the credit risk from their counterparties, domestic commercial banks accepted RMB bonds from the overseas central banks as collateral to ensure that the swap contract can be successfully implemented.



Use of RMB Bonds in Cross-Border Business

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CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

CCDC+ Cooperation

04

PART THREE

Innovations of Collateral Service Arrangements

Innovations of Collateral Service Arrangements

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CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

R&D Platform

Support in CIBM innovations

Pre-issuance services

Automated centralized securities lending

Tri-Party Repo

- **In October 2018, PBOC officially announced the launch of tri-party repo in CIBM**
- Tri-party repo is popular in global repo markets for its cost reduction and higher efficiency

Innovations of Collateral Service Arrangements

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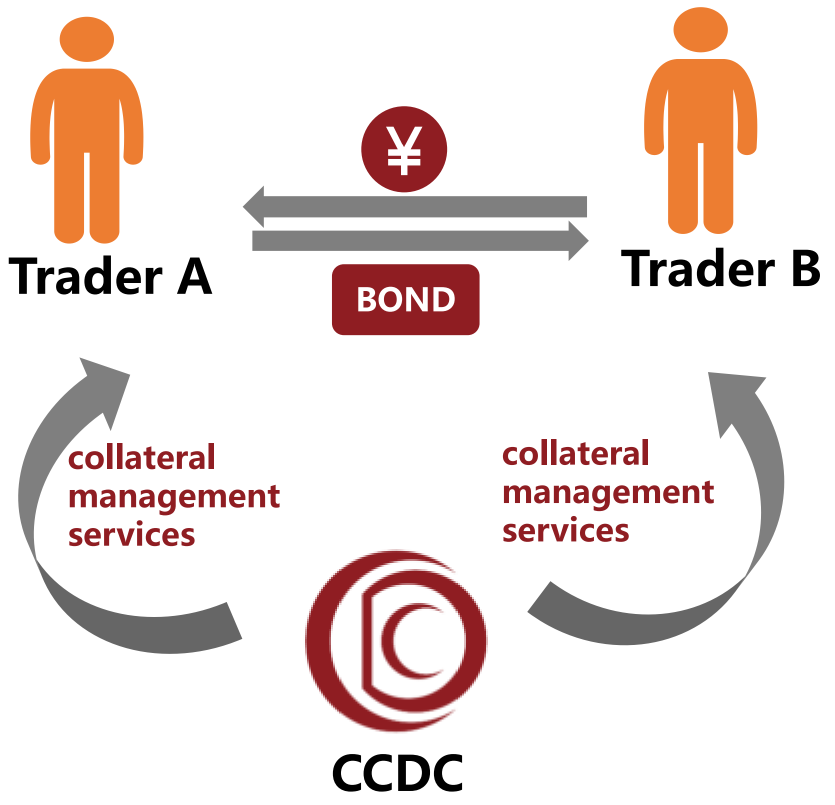

Tri-Party Repo

- The core of tri-party repo is the introduction of a central securities depository acting as a third party to provide centralized and professional collateral management services

Disposition of Collateral After Default

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

Disposition of collateral after default

- **Major breakthrough: disposition of collateral**

- **The core difference of pledge and title-transfer is whether the title of bond collateral has been transferred**

- **China’ s legal support :**

debtor does not fulfill maturing debt , creditor can negotiate with debtor using pledged assets as a deduction, or creditor has higher priority with pledged assets which disposed for auction.

Disposition of Collateral in Tri-Party Repo

中央国债登记结算有限责任公司
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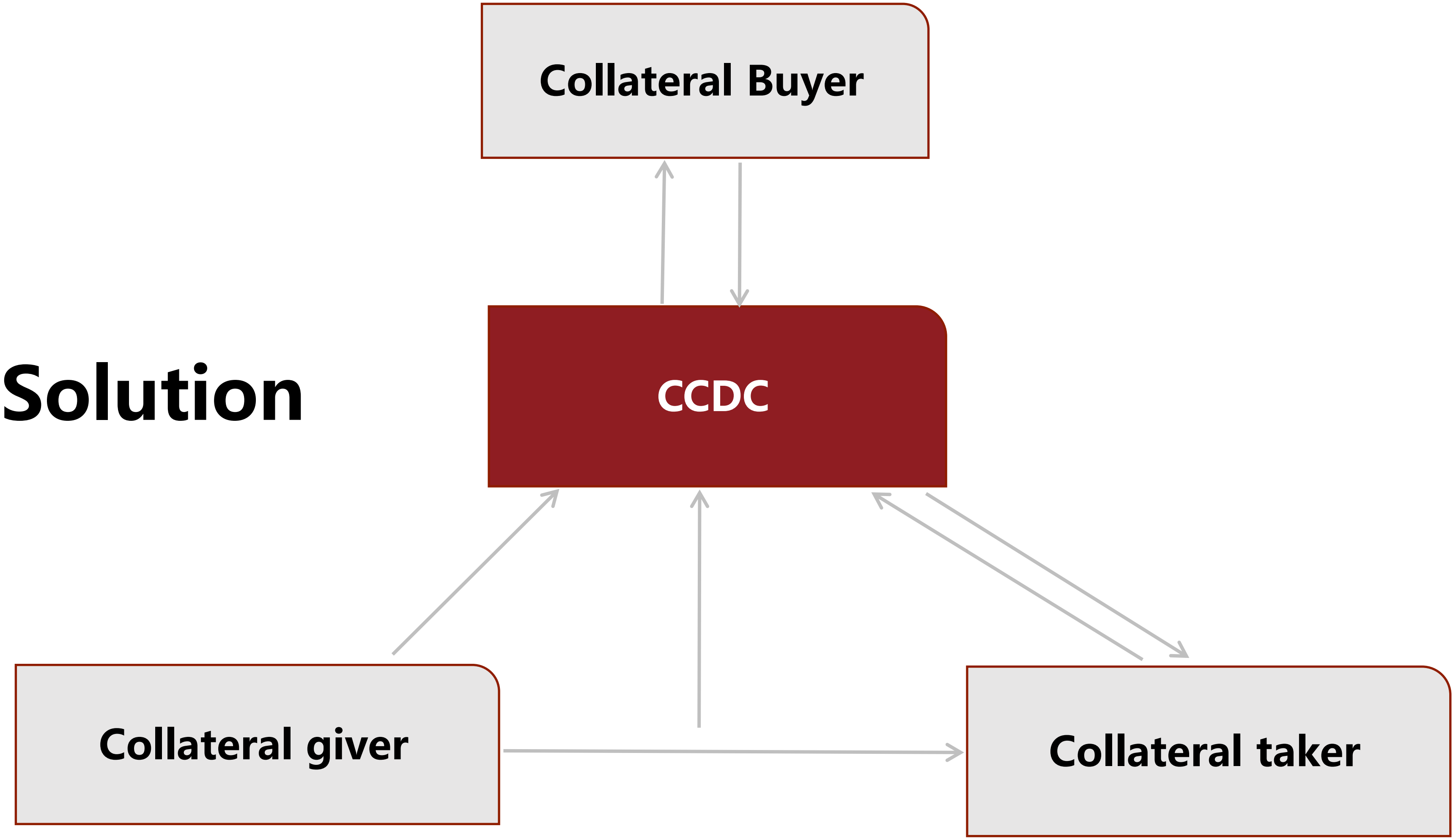
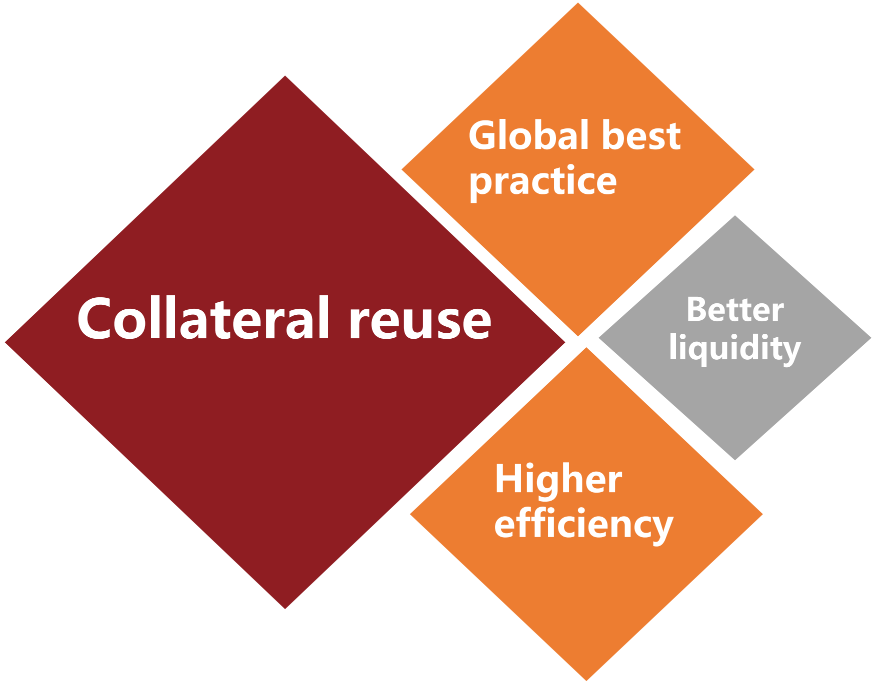
CCDC Solution



Reuse of Collateral to Increase High-Quality Liquidity Supply



- In global markets, bond collateral in repos can be reused to create more liquidity

- The multiplier effect of collateral reuse is moving towards a reasonable range

- No legal barrier to this mechanism

Thank You!

中央国债登记结算有限责任公司
CHINA CENTRAL DEPOSITORY & CLEARING CO., LTD.

Tel: +8621 60813316

E-mail: taofei@chinabond.com.cn

JAN 29, 2019

DTCC

DTCC's DLT Journey

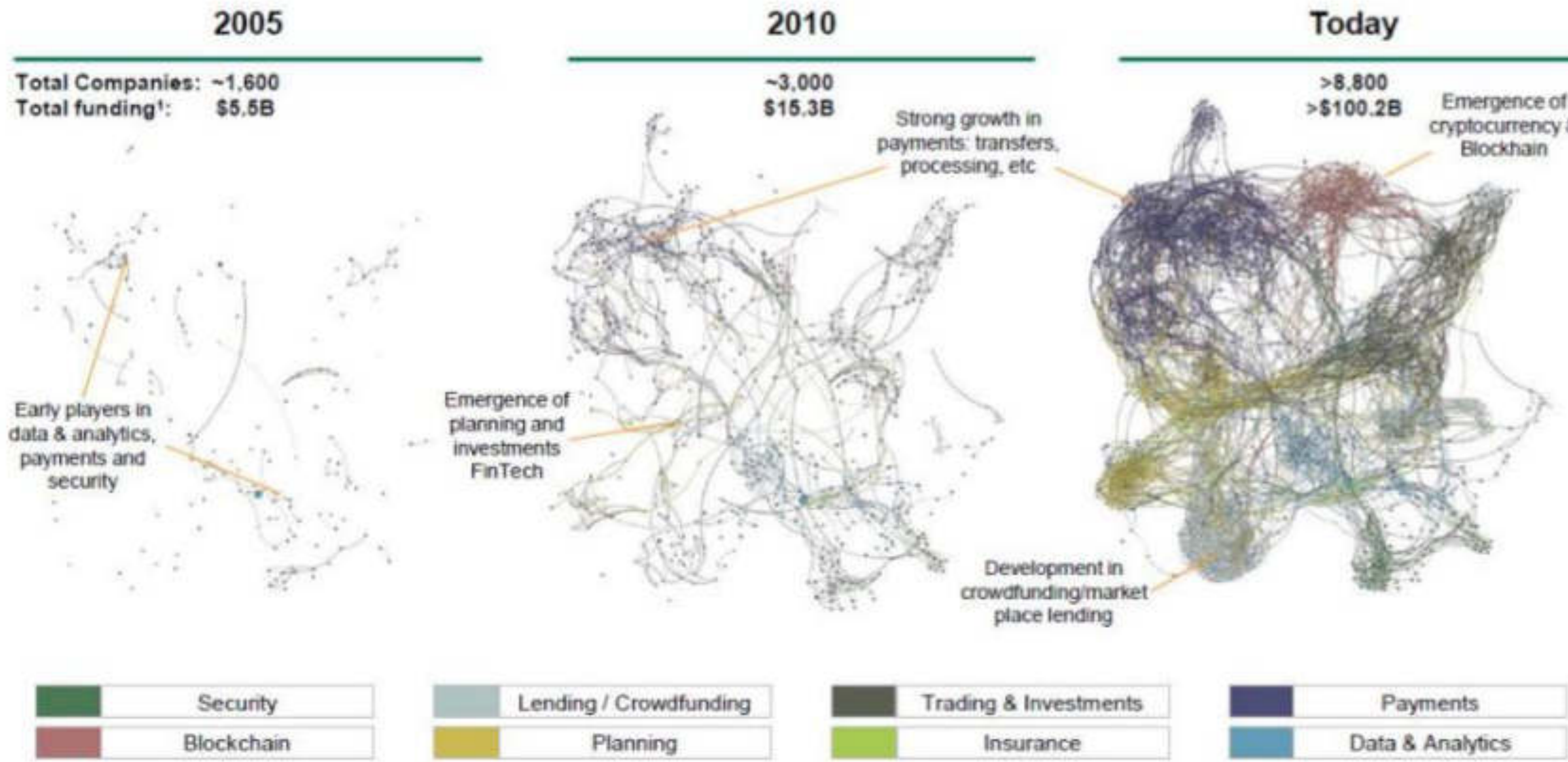
Session 11: Use of Distributed Ledger Technology by Market Infrastructures

ABMF, January 2019

The FinTech challenge: focus on distributed ledger technologies

ECB-UNRESTRICTED

Since 2000, FinTech investments has grown dramatically



Visualization based on ~1,800 FinTechs receiving the highest amount of private funding. Dataset mapped with Quid and allowed to cluster based on similar products, technologies, customers etc.
1) Data based on over 8,800 companies which were discovered across over 4 data sources. Total funding based on date of funding. Total companies based on founding year. Data as of November 2016.
Source: Quid, BCG /Expand/BCG Digital Venture/B Capital analysis

Source: Fintech Control Tower, Expand, November 2016

DTCC

DLT INITIATIVES

- Organized the Office of Fintech Strategy; DLT Whitepapers
- Founding member and member of the Governing Board of the Linux Foundation's HyperLedger Open Source project; hosted the first HyperLedger technology meeting in February 2016
- Leadership role in the Enterprise Ethereum Alliance; contributed over 50K lines of code
- Early investor in Digital Asset Holding
- In the US, involvement in multiple industry POC and pilots resulting in collective learning
- Notable DLT projects
  - Repo clearing
  - TIW re-platforming
  - Performance benchmark to settle US equities trades using DLT
- Globally, engage with clients, industry bodies and regulators to share experiences

RE-PLATFORMING DTCC'S TRADE INFORMATION WAREHOUSE (TIW) (aka *Credit Market Infrastructure Refresh*)

2003
Deriv/SERV established as a global matching service to automate the paper intensive process for credit default swaps

2006
Deriv/SERV launches its TIW

2009
Markit and Deriv/SERV launch MarkitSERV as a joint venture that combines the firms' confirmation services within the OTC derivatives space

2013
Deriv/SERV sells its stake of MarkitSERV to Markit. Markit owns confirmation/ matching; Deriv/SERV owns event processing/payments

2016
Successful Proof of Concept (POC) with Deriv/SERV, IHS Markit and 6 banks demonstrating CDS processing managed on DLT

2017
Agreement from IHS Markit and Deriv/SERV to work in parallel in migration to new technologies

2018
Integration, scripted, and open user acceptance testing for TradeServ and TIW DLT

2019
TradeServ and TIW DLT phase 1 go live

RE-PLATFORMING DTCC'S TRADE INFORMATION WAREHOUSE (TIW) – SOME LESSONS LEARNED

- Industry Collaboration
- Governance
- Interoperability
- Business case
- Regulatory

Tactical Considerations:

- Choosing how much business logic to put in smart contract vs. off-chain has a significant performance impact
- The tools for DLT development are still "primitive"
- The debugging tools for DLT production issues are non-existent

Bank of Japan and
European Central Bank

Project Stella


EUROPEAN CENTRAL BANK
EUROSYSTEM

STELLA

STELLA - a joint research project of the European Central Bank and the Bank of Japan

Payment systems: liquidity saving mechanisms in a distributed ledger environment

September 2017

https://www.ecb.europa.eu/paym/groups/pdf/omg/2017/201712/2017-12-12%20_ECB_OMG_Item2_STELLA_Project.pdf?640f7bd81214cf9c539b1735ce12d5ad

DTCC

PROVING THAT DLT CAN SCALE – THE US EQUITIES MARKET BENCHMARK TESTING

- **Test Objective:** To analyze DLT's ability to process the massive trading volumes of the US equities market

- **Testers:** Accenture with support from Digital Asset and R3

- **Test Environment:** AWS cloud; network of 170+ participant nodes in a private blockchain; using a prototype to test the capture of matched equities trades, novate them, create netted obligations and settle the obligations

- **Key Findings:**
  - DLT can support the average daily trading volumes in the US equities market of 100+ million. DLT performed at levels necessary using peak volume of 6,300 trades/second processing for 5 continuous hours.
  - Private/permissioned blockchains can be more efficient and scalable because they allow for censorship and ensure that only known and trusted parties are participating in a network; eliminates inefficiencies in public blockchain to combat censorship resistance and need to deal with unknown/untrusted parties

- **Is DTCC ready to re-platform its core systems into DLT?**
  Not yet. Need to prove resiliency, security, operational and regulatory performance. Plus testing beyond the basic functionality such as asset servicing.

DTCC

COMPARING DLT TO EXISTING PLATFORMS

ADVANTAGES	CHALLENGES
✓ Security is built in ✓ Sharing of documents and records is integral part of the technology ✓ Business rules and data schemas are built into the DLT and into the smart contract ✓ After the platform is implemented, time to market for adding new contracts for additional asset classes is much faster ✓ Resilience is enhanced by the distributed platform	• DLT is unproven for big-scale use • Distributed systems are inherently complex • Fixing DLT is unproven • Performance and scale are unproven • DLT vendor viability, durability and sustainability is unproven

AS AN FMI (Operator or Participant), WHERE TO START?

Distributed ledger technology in payment, clearing and settlement

An analytical framework

February 2017

BANK FOR INTERNATIONAL SETTLEMENTS

https://www.bis.org/cpmi/publ/d157.pdf

DTCC

BIS DLT ANALYTICAL FRAMEWORK

"DLT may radically change how assets are maintained and stored, obligations are discharged, contracts are enforced, and risks are managed. Proponents of the technology highlight its ability to transform financial services and markets by: (i) reducing complexity; (ii) improving end-to-end processing speed and thus availability of assets and funds; (iii) decreasing the need for reconciliation across multiple record-keeping infrastructures; (iv) increasing transparency and immutability in transaction record keeping; (v) improving network resilience through distributed data management; and (vi) reducing operational and financial risks.[1] DLT may also enhance market transparency if information contained on the ledger is shared broadly with participants, authorities and other stakeholders. The use of DLT, however, does not come without risks. In most instances, the risks associated with payment, clearing and settlement activities are the same irrespective of whether the activity occurs on a single central ledger or a synchronised distributed ledger.[2] That said, DLT may pose new or different risks, including: (i) potential uncertainty about operational and security issues arising from the technology; (ii) the lack of interoperability with existing processes and infrastructures; (iii) ambiguity relating to settlement finality; (iv) questions regarding the soundness of the legal underpinning for DLT implementations; (v) the absence of an effective and robust governance framework; and (vi) issues related to data integrity, immutability and privacy. **DLT is an evolving technology that has not yet been proven sufficiently robust for wide scale implementation**."

VIDEOS – DTCC 2018 Fintech Symposium

http://www.dtcc.com/dtcc-connection/articles/2018/april/17/video-highlights-from-dtcc-2018-fintech-symposium

DTCC 2019 Fintech Symposium, 30 APRIL

THANK YOU!!!!

An APEC Roadmap
for a New
Financial Services Data Ecosystem

AN UNDERTAKING OF THE

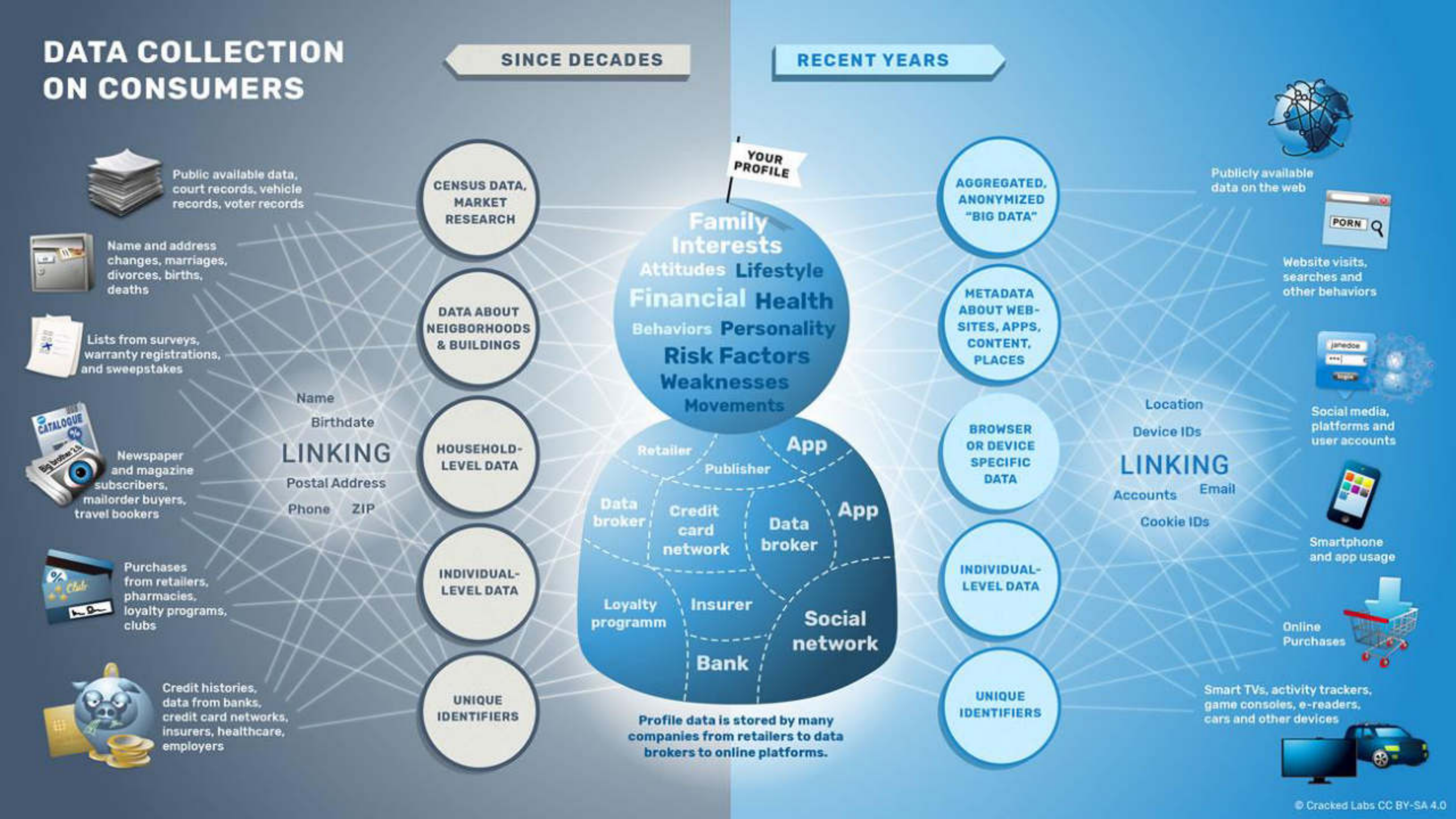
ASIA-PACIFIC FINANCIAL FORUM

The APEC Mission Statement

"We are united in our drive to build a dynamic and harmonious Asia-Pacific community by championing <u>**free and open trade and investment**</u>, promoting and accelerating <u>**regional economic integration**</u>, encouraging economic and technical cooperation, enhancing human security, and facilitating a <u>**favorable and sustainable business environment**</u>. Our initiatives turn policy goals into concrete results and agreements into tangible benefits."

“Data flows are the currency of the digital economy that fuels growth in the information age”

Concluding APEC Senior Officials’ Meeting
Sydney, Australia
2-3 September 2007



DATA COLLECTION ON CONSUMERS
SINCE DECADES
RECENT YEARS
Public available data, court records, vehicle records, voter records
Name and address changes, marriages, divorces, births, deaths
Lists from surveys, warranty registrations, and sweepstakes
Newspaper and magazine subscribers, mailorder buyers, travel bookers
Purchases from retailers, pharmacies, loyalty programs, clubs
Credit histories, data from banks, credit card networks, insurers, healthcare, employers
Name
Birthdate
LINKING
Postal Address
Phone
ZIP
CENSUS DATA, MARKET RESEARCH
DATA ABOUT NEIGBORHOODS & BUILDINGS
HOUSEHOLD-LEVEL DATA
INDIVIDUAL-LEVEL DATA
UNIQUE IDENTIFIERS
YOUR PROFILE
Family
Interests
Attitudes
Lifestyle
Financial
Health
Behaviors
Personality
Risk Factors
Weaknesses
Movements
Retailer
Publisher
App
Data broker
Credit card network
Data broker
App
Loyalty programm
Insurer
Social network
Bank
Profile data is stored by many companies from retailers to data brokers to online platforms.
AGGREGATED, ANONYMIZED "BIG DATA"
METADATA ABOUT WEB-SITES, APPS, CONTENT, PLACES
BROWSER OR DEVICE SPECIFIC DATA
INDIVIDUAL-LEVEL DATA
UNIQUE IDENTIFIERS
Location
Device IDs
LINKING
Accounts
Email
Cookie IDs
Publicly available data on the web
PORN
Website visits, searches and other behaviors
Social media, platforms and user accounts
Smartphone and app usage
Online Purchases
Smart TVs, activity trackers, game consoles, e-readers, cars and other devices

Data and inclusive finance

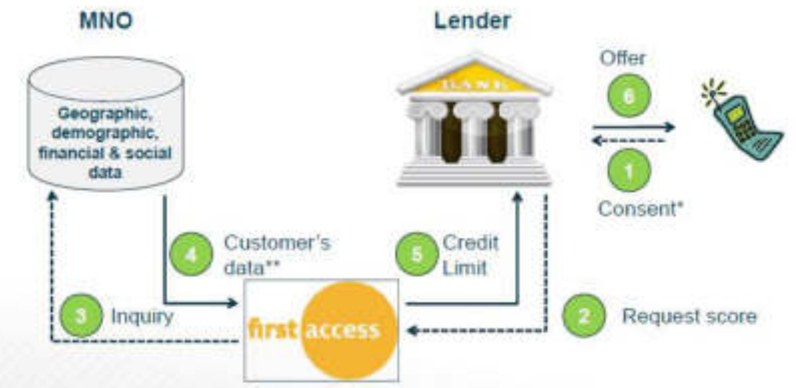
1 Rapid Customer Segmentation/Customization

Analytics

- **Data mining of social signals** from customers and prospects, i.e, key life events
- **Individualized reach campaigning**
- **Tailor customer service &** increase efforts to cross sell

- **Example:** US insurer field pilot empowering reps to use social media
- Impact
  - 22% increase in productivity
  - Reduced time for content distribution by 75%.
  - Thousands of new leads generated monthly

3 Reducing risk through predictive analytics



* Customer consents to sharing mobile usage data
** Usage for given period shared one-time

CGAP

2 Speed client acquisition through automation

DemystData
U.S.

1. Making data available
- Scrapes internet to gather application data
- Verifies identity
- Reduction of ~15% "false negatives"

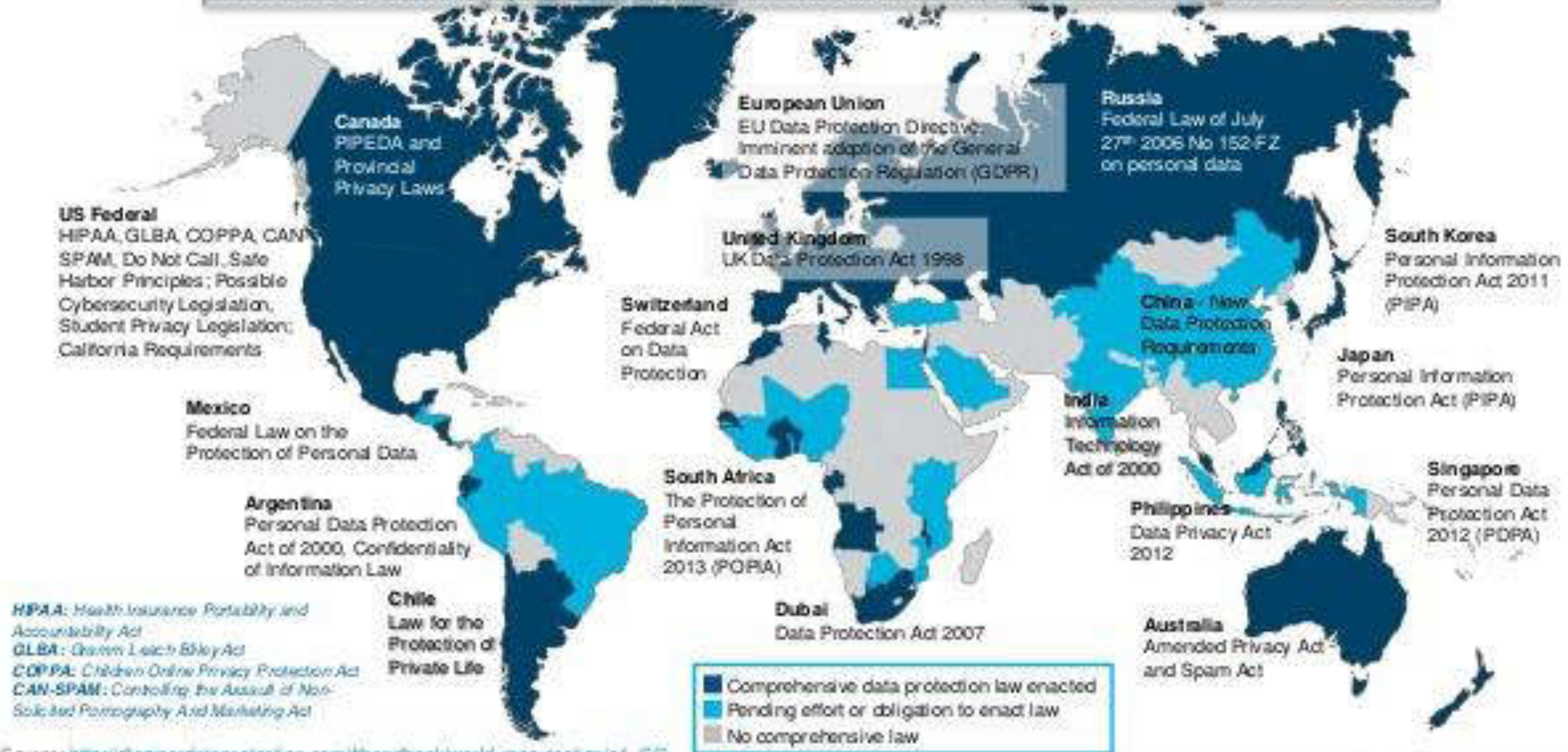
Agora Advisory
India

2. Auto-completing information analysis
- Auto-populates "ability to repay" farmer data
- Leaves bank staff to focus on "willingness to repay" judgments

CGAP

Nearly 100 countries around the world have adopted data protection and privacy laws

Selected Comprehensive Data Protection/Privacy Laws and Bills as of 1/2016



Source: http://dlapiperdataprotection.com/#handbook/world-map-section/c1_SG

APEC Roadmap for a New Financial Services Data Ecosystem

- Identify critical building blocks of an enabling data ecosystem
- Outline concrete initiatives and actions to put these building blocks in place over a reasonable time frame
- Provide a tool for promoting consistency of laws, policies and regulations with existing internationally agreed principles, frameworks and good practices
- Identify areas where work is needed to achieve regional consistency
- Point out key considerations and the way forward
  - For reforms in individual jurisdictions
  - For regional cooperation

General Data Regulation

Consistency with core principles of data protection

- General agreement on core principles: Key examples
  - OECD Guidelines on the Protection of Privacy and Trans-border Flows of Personal Data
  - APEC Privacy Framework
  - WBG Good Practices for Financial Consumer Protection
- Diversity leads to significant differences among data protection regimes across jurisdictions
- **Achieve a level of consistency to allow for inter-operability among regimes and cross-border data transactions**

Consistency among domestic laws and regulations

- Overlaps:
  - Multiple specific laws on data privacy and security
  - Different laws across levels of government (e.g., federal and state)
  - Overlaps of jurisdictions among regulatory bodies
- Inconsistency of objectives
  - Promotion of open banking vs. stringent data protection
  - Promotion of cross-border e-commerce vs. data localization requirements
  - AML/CFT requirements vs. privacy, consent, and confidentiality
- **Review laws, policies and regulations and initiate reforms**

Expanding data collection and sharing

- **Establish full-file and comprehensive credit information systems**
  - Positive and negative data
  - Traditional and alternative data
  - Expand sharing of credit information from various sources
- **Develop potential of unstructured data**
  - Balanced legal/regulatory approach to new data/analytics industry
  - Establish a general personal data regulator
  - Establish independent industry association; develop codes of conduct and self-regulatory capacity

Sound frameworks for data collection, storage, sharing and use

- **Build policy making and regulatory capacity** to deepen understanding of data technology and industry landscape
- **Support broader role for industry**
  - Codes of conduct
  - Self-regulation
  - Financial education and public awareness
  - Industry-regulator cooperation
    - Reviewing methodologies and algorithms
    - Developing robust data standards and best practices in data governance and management

Sound frameworks for data collection, storage, sharing and use

- **Collaborate with public, private and international stakeholders to review adequacy and appropriateness of domestic laws and regulations and undertake reforms**
  - Reforms: proactive, holistic and systemic
  - Approach: principles- and risk-based, technologically agnostic and avoid being unduly prescriptive
  - Regulations: flexible and proportionate
  - Focus: Misuse of data and collection limitation principle instead of assembly and use of data
  - Level-playing field and shift from entity-based to activity-based regulation

Cross-Border Data Flows

Addressing concerns behind data localization

- Data localization not consistent with APEC's view:
  - Organizations increasingly rely on data for many purposes
  - Free and open trade and investment involving consumers cannot take place without the collection and sharing of personal data across borders
- Data localization has significant costs and unintended consequences
- Data localization creates tensions between competing regulatory requirements and business inefficiencies
- **Identify concerns behind data localization and evaluate whether they can be better addressed through other measures that are compatible with wider cross-border data sharing**

Cross-border data privacy

- Goal: APEC jurisdictions to agree on a common framework that enables cross-border data flow while assuring data protection
- Current situation:
  - APEC Privacy Framework + CBPR at very early stages of development
  - GDPR driving changes globally – bilateral negotiations
- Challenges:
  - How APEC can reach common framework / regional privacy regime
  - How to achieve inter-operability with GDPR
- **Undertake gap analyses between:**
  - **APEC jurisdictions and APEC Privacy Framework/GDPR**
  - **APEC Privacy Framework/GDPR and CBPR**
- **Ways to expand participation in CBPR**

Data security

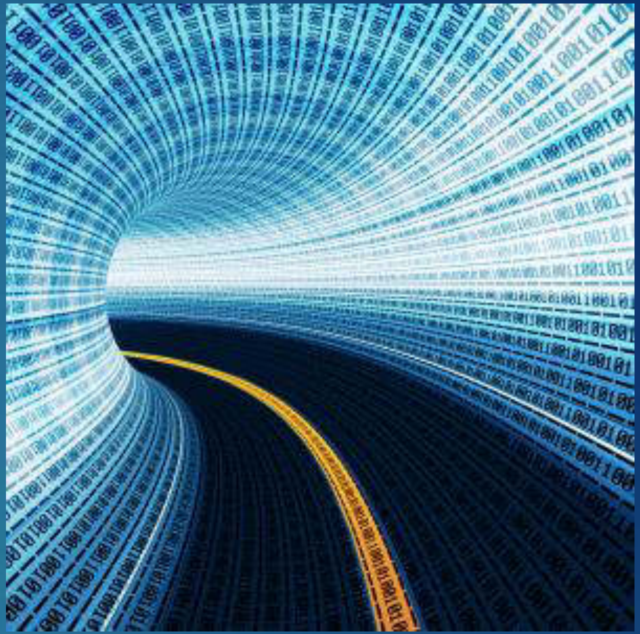
- Comprehensive set of controls to prevent inadvertent disclosure of data
- Wider adoption of technology creates a growing need for public-private collaboration to build stronger foundations for data security
  - Long-term strategy for managing the data security environment
  - Comprehensive guidelines on data security and business continuity
  - Wider intelligence-sharing among jurisdictions
  - Innovative programs, development of expertise, regulatory sandboxes, prioritization, capacity building
- **APEC long-term strategy for strengthening data security**
- **Review of cyber resilience legislation + industry best practices**

Cross-border access to data for law enforcement

- Mutual Legal Assistance process overwhelmed by explosion of digital information
  - One of factors driving data localization
- **MLA process needs to be reformed and streamlined (e.g., use of online forms)**
- **International agreements for data sharing for law enforcement purposes**
- **Public-private sector partnerships**

Domestic infrastructure and industry development

- Another driver of data localization, which has unintended and adverse consequences
- **Need for holistic set of enabling policies and measures, can benefit from:**
  - **APEC Blueprint for Action on Electronic Commerce**
  - **APEC Best Practices to Create Jobs and Increase Competitiveness**



Regional platforms

- Deployment of new technologies – regulatory concerns on implications on cross-border data flows
  - Blurring of jurisdictional borders
  - Opacity of technologies – concerns about accountability, recourse and enforcement
  - Technology develops faster than legislation and rule/making
  - Scarcity of specialized technical experts
- **Collaboration among regulators and industry to develop regional platforms for facilitating innovation in cross-border financial services**
  - **E.g., ASEAN Financial Innovation Network (AFIN)**
  - **Linkages among domestic regulatory sandboxes**

Updates and Next Steps

Updates

- 26-27 September 2018, Washington DC: Consultations with North American stakeholders
- 17 October 2018: APEC Finance Ministers called for advancing the Roadmap in 2019 for their consideration
  - "We note the work of ABAC and the APFF in promoting regional public-private platforms for financial innovation and digitalization***, cross-border data ecosystems*** and personal insolvency reform, and look forward to this work being advanced next year."

Next Steps

- Further consultations
  - 29 January 2019, Manila: Consultations with regulators and officials at ABMF meeting
  - 2 March 2019, Atlanta: Further discussions of roadmap recommendations on data privacy and security
  - 7-8 March 2019. Santiago: Presentation to and discussions with APEC Finance and Central Bank Deputies
  - 2-3 April 2019, Shanghai: Data Ecosystem Roadmap conference
  - Further consultations with relevant public and private stakeholders in the region and relevant APEC fora
- Finalization of Roadmap
- Consideration by APEC Finance Ministers in October 2019
- After endorsement – collaboration with relevant policy makers and regulators to implement the Roadmap

Collaborators (as of December 2018)

APEC Business Advisory Council ✿ APEC Secretariat ✿ Access Partnership ✿ Allen & Gledhill ✿ Ant Financial Services Group ✿ Arent Fox LLP ✿ Asia Cloud Computing Association ✿ Asia-Pacific Credit Coalition ✿ Asia Policy Partner ✿ Axiom SL ✿ BAFT ✿ Bain & Co. ✿ Barefoot Innovation Group ✿ BlackRock ✿ BSA/The Software Alliance ✿ Business Information Industry Association ✿ Center for Financial Industry Information Systems, Japan ✿ Chartered Alternative Investment Analyst Foundation ✿ Citi ✿ CoreLogic ✿ Credit Builders Alliance ✿ Crowell & Moring LLP ✿ C&M International ✿ DAI ✿ DBS Bank Ltd ✿ DBS Group ✿ DTCC ✿ Data & Analytics Capital ✿ Data Synergies ✿ Deutsche Bank ✿ Drew & Napier LLC ✿ Ethereum Foundation ✿ European Central Bank ✿ Experian ✿ FICO Scores ✿ Fidor ✿ FinReg Lab ✿ Georgetown University ✿ GoldsteinCope Policy Solutions ✿ Google ✿ Harvard Law School ✿ Herbert Smith Freehills ✿ HSBC Bank USA ✿ Immuta ✿ Institute of International Finance ✿ Inter-American Development Bank ✿ International Finance Corporation ✿ International Monetary Fund ✿ ISDA ✿ JD Finance ✿ JP Morgan Chase ✿ MasterCard ✿ Microsoft Corporation ✿ Mizuho Bank Ltd ✿ Monetary Authority of Singapore ✿ Moody's ✿ National Credit Bureau (Thailand) ✿ NCR Corporation ✿ Nova Credit ✿ OCBC Bank ✿ Pallas Global Advisors ✿ PayPal ✿ Policy and Economic Research Council ✿ Policy Support Unit, APEC ✿ Potomac International ✿ SAP Asia ✿ Singapore Management University ✿ Singapore Personal Data Protection Commission ✿ SME Finance Forum ✿ Steptoe & Johnson LLP ✿ SWIFT ✿ Standard Chartered Bank ✿ Stradegi Consulting ✿ Swiss Re Asia Pte Ltd ✿ TRPC Pte Ltd ✿ The University of Hong Kong ✿ Thomson Reuters ✿ Token Insights ✿ Tradle ✿ TransUnion ✿ UOB ✿ US-ASEAN Business Council ✿ US Bureau for Consumer Financial Protection ✿ US Department of Commerce ✿ US Department of the Treasury ✿ US Chamber of Commerce ✿ US Federal Trade Commission ✿ US National Institute of Standards and Technology ✿ Venable LLP ✿ World Bank Group

We need your feedback!

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