ASEAN+3 Task Force Meeting & APCF Seminar

October 25th, 2017
Seoul, Korea
The global safe asset shortage and emerging market issuers

Robert McCauley

BIS
The global safe asset shortage and emerging market issuers

[Discussant]
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Bank for International Settlements

Presentation at the APCF Seminar on Prime Collateral
Seoul, 25 October 2017

* Views expressed are those of the author and not necessarily the views of the BIS
Agenda

- Examine critically empirical grounding for safe assets shortage story.
- Set aside the FX reserves story and consider demand for safe assets from
  - centralized clearing of derivatives,
  - margin for non-cleared derivatives, and
  - liquidity coverage ratio.
- Consider what it would take to move Asian bond markets ahead by making government bonds
  - not only more or less safe,
  - but also more useful as collateral.
Demand from centralised clearing, not FX reserves?

Asia clearing surge raises concerns over eligible collateral

Scarcity of high-quality liquid assets gives rise to liquidity risk worries, say banks

Frances Ivens
27 Sep 2017
Triffin dilemmas: original and new versions

- **1960s: Dollar and gold**: World growth without deflation requires rising US liabilities, but when these outgrow US gold, system breaks down.

- **1980s – now: US current account** deficits needed to provide dollar reserves, but eventually US net debt too big, $ collapses.

- **2000s: Safe asset shortage** as emerging markets need to accumulate reserves and hold US Treasuries:
  - If supply of US Treasuries through US fiscal deficits keeps up with demand, eventually US Treasury downgraded or default.
  - If supply does not keep up with demand, deflation and weak growth.
The original Triffin dilemma in one graph  
(Billions of US dollars)

- Implicitly gold price too low.
- So world depends on additions to dollar reserves to support global trade growth.
- But, without deflation, US liabilities to rest of world eventually exceed US gold...
- ...leading to a run on the US gold stock and system collapse.
The safe assets shortage in one graph circa 2013
(Trillions of US dollars)

- US dollar reserves rise from <$2 trillion in 2000 to $7 trillion in 2013.
- US Treasury debt rises from $5 trillion in 2000 to $17 trillion in 2013: D/GDP up!
- If world and reserves grow at 6% and US and Treasury debt grow at 4%, then eventually a safe assets shortage.
The safe assets shortage in one graph circa 2016
(Trillions of US dollars)

- US dollar reserves fall as China, others shift to selling dollars to support domestic currency.
- Looking back, demand for safe assets or side-effect of currency management in weak dollar cycle 2002-12?

![Graph showing the safe assets shortage with treasury debt outstanding and estimated US dollar foreign exchange reserves.]
Supply story vs dollar assets w/o fiscal deficits

- Safe assets can be defined as what most central banks are willing to hold in their reserves.
- By this, US Treasury competes with (sovereign-supported) $ safe assets issuers:
  - US agencies both explicitly guaranteed (GNMA) & not—Fannie & Freddie.
  - Supranationals: World Bank, EBRD, EIB, ADB, etc.
  - Non-US agencies: KfW, CADES, export credit agencies, etc.
  - Bank deposits.
- As a result, a significant fraction of dollar reserves invested in competing dollar safe assets.
The safe assets diagram again: US Treasury competes
(Trillions of US dollars)

- Rest of world’s dollar foreign exchange reserves exceed official holdings of US Treasury securities by a wide margin.
- Gap shows the supply of dollar safe assets that **does not** require US fiscal deficits.
If safe asset shortage, why do US Treasury 10-year bonds yield more than US dollar interest rate swaps? (basis points and billions of US dollars)

- The safe assets shortage predicts that safe assets should yield less than risky assets.
- Yet we observe that the US Treasury bond yields more than the generic private rate in US dollar interest rate swaps.
- Anomaly associated with peak reserves.
Conclusions on safe assets shortage as new Triffin

- Triffin’s apparent success in predicting the collapse of Bretton Woods attracts arguments about macro-financial quantities with unbalanced growth that may imply systemic instability.
- The idea that emerging market demand for safe assets will allow US Treasury profligacy or otherwise cause instability relies on
  - A stable, secular demand for foreign exchange reserves that is belied by “peak reserves” in 2014?
  - A narrow theory of the production of safe assets that ignores the extension of sovereign support to assets like mortgages, export credits, and development loans.
Emerging market economies: suppliers of safe assets?

- Much safe asset stories posit EMEs as demanders of safe assets and advanced economies as suppliers of same.
- By contrast, Alan Taylor, “The future of international liquidity and the role of China”, sees renminbi internationalisation as leading to China’s *supplying*, not just *demanding* safe assets.
- China could supply as much as it demands...
  - Its $3 trillion of FX reserves are largely invested in safe assets.
  - Its $X trillion in gov’t debt could serve as safe assets and even more if central bank liabilities added (Ma and McCauley, “Transforming central bank liabilities into government debt: the case of China”, *China & World Economy*, 2015).
- ...and materially add to global safe assets by 4% to 13%.
China could add safe assets: an SDR currency view
Central government debt in trillions of dollars, end-2014

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>Euro area</th>
<th>Japan</th>
<th>UK</th>
<th>China</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.5</td>
<td>8.3</td>
<td>8.6</td>
<td>2.5</td>
<td>1.4</td>
<td>33.4</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.2</td>
<td>36.2</td>
</tr>
</tbody>
</table>
Emerging market economies: suppliers of safe assets 2?

- More generally, emerging market governments with sufficiently solid credit metrics, including Korea, China or Mexico, can supply safe assets.
- In the case of Korea, as in China, not just government debt, but also central bank liabilities in domestic currency can serve as safe assets.
  - BoK and MOSF hold $385 billion of reserves, mostly financed with MSBs.
  - KTB and MSBs together could serve as safe assets.
### Pot‘l Korean addition to safe assets 2X MOSF
Outstanding government bonds in $ billions and %

<table>
<thead>
<tr>
<th></th>
<th>Korea</th>
<th>U. S.</th>
<th>Japan</th>
<th>U. K.</th>
<th>France</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outstanding Balance</td>
<td>429</td>
<td>13,207</td>
<td>7,483</td>
<td>2,195</td>
<td>1,749</td>
<td>1,239</td>
</tr>
<tr>
<td>Trading volume</td>
<td>31.2</td>
<td>73.6</td>
<td>181.5</td>
<td>77.0</td>
<td>72.2</td>
<td>36.9</td>
</tr>
</tbody>
</table>

*Source: (Outstanding balance) Ministry of Finance, DMO (GDP) IMF, World Economic Outlook, 2016.04*

**ADD MSBs!**

Source:

KOREA TREASURY BONDS
2016
Foreign holdings of KTBs & MSBs significant
Safe assets: beyond credit to liquidity

- If a bank enters a derivative transaction and subsequently receives collateral from the counterparty in the form of a US Treasury security, the security can be used to raise cash.
- However, if, eg a French bank does a derivative trade with a Korean bank and subsequently receives a KTB as collateral, it cannot raise cash.
  - Why is this so? Title transfer? Master documentation?
  - Not because no repo market for KTBs/MSBs: volume of KTB and MSB repo rising strongly
- Ditto for Chinese government bonds.
  - 96% of turnover in Chinese bond repos are “pledged repo”
  - These cannot be re-hypothecated.
Volume of KRW repo
In trillions of KRW

Source: KSD.
The global safe asset shortage and emerging market issuers

[Discussant]
Deokryong Yoon

Korea Institute for
International Economic Policy (KIEP)
Comment on

A Global Shortage of Safe Assets: A New Triffin Dilemma?

Deok Ryong Yoon
KIEP

25 October 2017
Contents

I Main points

II Comments

III Questions
I. Main Points

• Issue: The international monetary system faces a Triffin’s dilemma?
  → Dilemma between satisfying global demand for safe asset and maintaining solvency of the issuer
  → Demand tied to global economic growth, whereas supply tied to US economic growth

• Assumption:
  1) The demand for safe asset will grow due to EMEs’ ongoing precautionary accumulation
  2) The US has monopoly on the supply of safe assets

• Conclusion:
  1) EMEs’ secular build-up of safe assets in doubt
  2) There are many substitutes for US dollar (or TB)

⇒ Triffin’s dilemma is not so tight!
II. Comments

• Agree to the conclusion in current situation
• The conclusion may be true in normal times only

• However, the shortage of safe asset becomes sharp in time of financial friction
• In times of global stress, substitutes of safe assets disappear and unleash financial instability

• In a period of crisis,
  - The decline of safe assets can push the EMEs in a fragile state where financial instability increases further
  - The global banking will take place in the currency that offers an appropriate supply of safe assets. This role is fulfilled primarily by the US dollar for the moment.
→ The US get back the monopoly on supply of safe assets in crisis period

• In a globalized financial market, financial instability may occur more often

• The US may supply more currency without bounding to economic growth and fiscal sustainability,
  - EMEs and other economies are ready to pay inflation tax to get safe asset

• We are interested in international monetary and financial system to insure countries against shocks to their balance of payments and international financial contagion.

⇒ Triffin’s dilemma per se is not so important!
II. Comments

10-Year Government Yields

Pre-Crisis Period

Decline Period

- Switzerland
- United Kingdom
- Germany
- Australia
- USA

ECB Goes Negative
SNB Goes Negative
SRC Goes Negative
BOJ Goes Negative
III. Questions

• What are the possible solutions to safe asset shortage problems?

Solving the Safe Asset Shortage Problem

- Issue More Treasuries (↑Supply)
- ‘Shock and Awe’ Policy to Improve Economic Outlook (↓Demand)
- Negative Policy Rates
III. Questions

• What are the possible solutions to safe asset shortage problems?
  - GFSN (Global financial safety net)?
  - Multipolar monetary system?

• What should Asian countries do to overcome the safe asset shortage? ABMI? AMU?
### III. Questions

#### GFSN Resources for Systemic and Gatekeeper Economies 1/
(In percent of GDP)

<table>
<thead>
<tr>
<th>Country</th>
<th>FX Reserves</th>
<th>IMF Normal Access</th>
<th>RFA Unconditional</th>
<th>RFA Conditional</th>
<th>BSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
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<td>Euro Area 2/</td>
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<td>Japan</td>
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<td>Switzerland</td>
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<td>United Kingdom</td>
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<td>United States</td>
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<td>Singapore</td>
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<td>Korea</td>
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<td>China</td>
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<td>Russia</td>
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<td>India</td>
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<td>Sweden</td>
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<td>South Africa</td>
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<td>Brazil</td>
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<td>Mexico</td>
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<td>Turkey</td>
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<td>Panama</td>
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<tr>
<td>Australia</td>
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</table>

Unlimited resources, via issuing own reserve currencies and obtaining foreign-currency liquidity through the permanent and unlimited swap lines among major central banks.

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1/ The chart shows normal access to Fund resources for all countries—it does not take into account existing Fund arrangements with some of these countries.

2/ The ESM is currently limited and access to ECB liquidity support is subject to certain rules.

Source: IMF staff estimates.
Thank you
Q & A
The economics of collateral reuse and policy implications

Manmohan Singh

IMF
The economics of collateral reuse and policy implications

[Discussant]
Gongpil Choi
KIF Center for
Finance and Technology
The economics of collateral reuse and policy implications

Manmohan Singh
IMF
The Economics of Collateral Reuse and Policy Implications

First APCF International Seminar on Prime Collateral
Seoul, Korea October 25th, 2017

Manmohan Singh,
Senior Economist, IMF

Views expressed are of the author and not of the IMF, its Executive Board, or IMF management
Pledged collateral received by U.S. banks

![Graph showing pledged collateral received by U.S. banks from 2007 to 2016 for various financial institutions such as Bear Stearns, Lehman, Morgan Stanley, Goldman Sachs, Merrill/BoA, JP Morgan, and Citigroup. The y-axis represents billions of US dollars, and the x-axis represents the years from 2007 to 2016.]
Pledged collateral received by European banks (and Nomura)
Collateral from Hedge Funds

Hedge Funds largely finance their positions in two ways.

- **First**, they can either pledge collateral for reuse to their **prime broker** in lieu of **cash borrowing** from the PB (via rehypothecation).
  - In the U.S., SEC’s Rule 15c3a and Regulation T generally limits PB’s use of rehypothecated collateral from a client. Non US jurisdictions such as UK via English Law *do not* have any limits.

- **Second**, HFs also fund their positions via **repo(s)** with dealers who may or may not be their PBs.

- HF collateral **“to the street”** from PB and repo was about **$1.7 trill (2007)** and down to about **$1.3 trill** after Lehman’s demise. Most recently with AUM growing sizably, HF collateral to street **about $2.0 trillion**, end-2016.
Not all collateral flows are down—snapshot from the prime-brokerage market (source: Credit Suisse)
Securities Lending — a primary source of collateral to markets; also rebounding

<table>
<thead>
<tr>
<th>Collateral Received from Pension Funds, Insurers, Official Accounts etc.</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities Lending vs. Cash Collateral</td>
<td>1209</td>
<td>935</td>
<td>875</td>
<td>818</td>
<td>687</td>
<td>620</td>
<td>669</td>
<td>701</td>
<td>644</td>
<td>658</td>
</tr>
<tr>
<td>Securities Lending vs. Non-Cash Collateral</td>
<td>486</td>
<td>251</td>
<td>270</td>
<td>301</td>
<td>370</td>
<td>378</td>
<td>338</td>
<td>425</td>
<td>454</td>
<td>570</td>
</tr>
<tr>
<td>Total Securities Lending</td>
<td>1,695</td>
<td>1,187</td>
<td>1,146</td>
<td>1,119</td>
<td>1,058</td>
<td>998</td>
<td>1,008</td>
<td>1,137</td>
<td>1,098</td>
<td>1,228</td>
</tr>
</tbody>
</table>

Source: RMA
(iii) OTC Derivatives is not decreasing either: figure shows the relevant metric from the bilateral market (after netting); remaining market is moving to CCPs

|                      | Gross  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Foreign exchange contracts</td>
<td>4,084</td>
</tr>
<tr>
<td>B. Interest rate contracts</td>
<td>20,087</td>
</tr>
<tr>
<td>C. Equity-linked contracts</td>
<td>1,112</td>
</tr>
<tr>
<td>D. Commodity contracts</td>
<td>955</td>
</tr>
<tr>
<td>E. Credit default swaps</td>
<td>5,116</td>
</tr>
<tr>
<td>F. Unallocated</td>
<td>3,927</td>
</tr>
<tr>
<td><strong>GROSS CREDIT EXPOSURE</strong></td>
<td><strong>5,005</strong></td>
</tr>
</tbody>
</table>

* Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties. Gross credit exposure is after taking into account legally enforceable bilateral netting agreements.
## Sources of Pledged Collateral, Volume of Market, and Velocity (2007, 2010-2013)

*(In trillions of U.S. dollars; velocity in units)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Hedge funds</th>
<th>Securities Lending</th>
<th>Total</th>
<th>Volume of secured operations</th>
<th>Reuse rate (or Velocity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>1.7</td>
<td>1.7</td>
<td>3.4</td>
<td>10.0</td>
<td>3.0</td>
</tr>
<tr>
<td>2010</td>
<td>1.3</td>
<td>1.1</td>
<td>2.4</td>
<td>5.8</td>
<td>2.4</td>
</tr>
<tr>
<td>2011</td>
<td>1.3</td>
<td>1.05</td>
<td>2.35</td>
<td>6.1</td>
<td>2.5</td>
</tr>
<tr>
<td>2012</td>
<td>1.8</td>
<td>1.0</td>
<td>2.8</td>
<td>6.0</td>
<td>2.2</td>
</tr>
<tr>
<td>2013</td>
<td>1.85</td>
<td>1.0</td>
<td>2.85</td>
<td>5.8</td>
<td>2.0</td>
</tr>
<tr>
<td>2014</td>
<td>1.9</td>
<td>1.1</td>
<td>3.0</td>
<td>5.8</td>
<td>1.9</td>
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<tr>
<td>2015</td>
<td>2.0</td>
<td>1.1</td>
<td>3.1</td>
<td>5.6</td>
<td>1.8</td>
</tr>
<tr>
<td>2016</td>
<td>2.1</td>
<td>1.2</td>
<td>3.3</td>
<td>5.9</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Sources: Risk Management Association; also IMF Working Paper, Velocity of Pledged Collateral (Singh, 2011)
The wedge between “source collateral” and “reuse rate” suggests balance sheet space constraints.
Figure 1 is a snapshot of "z" or the nonbank/bank nexus explained in the analytical framework. The dealer bank depicted above are active in the cross-border collateral intermediation. So "zi" is important for dealer bank "i". The ultimate borrowers also borrow directly from commercial banks; however they are not shown in this figure as their interaction with nonbanks is minimal; hence "zi" is negligible.

/1 Figure 1 is a snapshot of "z" or the nonbank/bank nexus explained in the analytical framework. The dealer bank depicted above are active in the cross-border collateral intermediation. So "zi" is important for dealer bank "i". The ultimate borrowers also borrow directly from commercial banks; however they are not shown in this figure as their interaction with nonbanks is minimal; hence "zi" is negligible.
Credit supply to the end-users is provided either by equity $e_i$, of the banking system (including leverage $\lambda_i$) and non-bank funding; “$z_i$” is important to understand—[see Shin, BIS working paper 304].
When both private and public balance sheets do the plumbing

- Fed's RRP
- Money Market Funds
- GSEs (e.g., Fannie, Freddie)
- Dealer banks
- Hedge Funds
- REPOs/PRIME BROKERAGE
- SECURITIES LENDING
- Asset Managers, pension funds, insurers, SWFs, official sector etc (via custodians)
Policy rate (Fed Funds) and repo rates (GCF)
Lean central bank balance sheets reduce bank deposits (i.e., excess reserves) and increase private “balance sheet space”
Data, Transparency and Building Repo Capacity in Asia

[Discussant]
Gongpil Choi

KIF Center for Finance and Technology
Comments on Singh’s Collateral Reuse and Balance Sheet Space

By Gongpil Choi
Regulations and monetary policy need to be mindful about collateral flows (Singh and Stella 2012)

- This paper is a high-level discussion about monetary policy in light of the importance of collateral in lubricating the system.
- The important role of collateral and diverse suppliers of collateral (securities lending, derivatives, prime brokerage markets) in plumbing of the financial system
- The so-called private bank balance sheet space is a very important aspect of policy-making.
- In-depth analyses on neglected aspects of plumbing the system—”market intermediation of collateral”
- Very insightful and useful for authorities in broadening the scope of policy-making
Monetary policy implications on collateral flows and market liquidity

• Both QE and regulations constrain the flow of collateral of which some will not be reusable.

• QE reduces BS space as deposits or excess reserves via QE sit on bank BS.

• QE related measures reduce the collateral reuse rate (or velocity) since good collateral assists in pricing other pledged collateral in the market domain.

• These can be mitigated by liquidity hubs used by global custodians. (Broadening the market scope helps!)
Factors affecting Collateral Flows

• Regulations / Incentives

• Private sector bank balance sheets constraints
  : Market capacity to intermediate collateral

• Nonbank suppliers of collateral
  : Hedge funds, pension funds, insurers, SWFs
Excess Demand for Prime Collateral

• Regulations (liquidity and leverage ratios) > incremental supply from better collateral connectivity and new debt issuance: HQ collateral rates below zero

• Initial margins at CCPs, capital buffers would prevent the reuse of HQ collateral.

• QE and regulations constrain the flow of collateral by reducing BS space and the collateral reuse rate (including lowering velocity).

• Changed landscape of collateral after the GFC

• Improved functioning of the collateral market is the key agenda.
A Missing Link for Financial Stability in Asia

Monetary Policy

Pledged Collateral Flows

Market Liquidity
Integrated market environment / concentrated role of big players / yet no discussions about Asian collateral pool

- Segmented, disjoint markets and market infrastructures
- Different policy-making environment and governance
- Globally polarized collateral and repo infrastructures
- Given the importance and structural issues, repo market should be expanded and collateral use needs to be harmonized.
- Asia is even more dependent on heavy market infrastructure, capital market functioning in advanced economies.
- If the functioning of collateral market is important and the nonbanks take the role as providers of collateral, thus liquidity is even more important, then the EM will face serious problems.
Benefits of the Asian Repo Market

• If prime collateral pools can be maintained, repo transactions can be utilized for liquidity provision.
• Collateral Transformation Services can be made available.
• Options and derivatives can be applied.
• Asia needs more balanced central bank BS and stable supply of credit that is less influenced by external shocks.
• Stability via market access and transactions, not by holdings of safe assets, should be maintained.
If AE’s collateral issue is the source of the problem, it needs to be fixed.

- Removing collateral from the financial system and substituting collateral with excess reserves that QE created or vice versa will impact financial plumbing.
- Expanded collateral pool, Asia’s collateral supply
- Collateral velocity decline is due to myopic, silo-type of governance and poor market infrastructures.
- Collateral might be neutral in normal times: smooth interbank funding, abundance of collateral, low recourse of CB refi facilities
- Illiquid collateral at the peak of the crisis, illiquid collateral = about 25% of total collateral pledged
The Eurosystem collateral framework

• Rules related to the eligibility, valuation and risk management of assets are accepted to secure refinancing operations.
• A single list based on rules accepts wide range of assets: marketable (Gov bonds, corporate bonds...) and non-marketable (credit claims...)
• Default probability no higher than 0.4% (raised at max to 1.5%) (i.e.≈ BBB-)
• Securities taken at market value when possible (or model-based price)
• Haircut is applied, depending on liquidity, credit rating, residual maturity and coupon type (max haircut 65%).
• Credit rating from external companies (S&P, Fitch, Moody’s, DBRS) or internal credit assessment models (ICAS)
Design of collateral framework for Asia

• Central bank collateral framework defines what can be exchanged (pledged) against reserves.

• It also defines to what extent illiquid assets can be temporarily converted into the most safe and liquid ones.

• Sovereign debt crisis reduced the value of usual safe asset liquid collateral: No private-market option to trade illiquid assets.

• Wholesale funding shocks increased the demand for refinancing at the central bank: Pledgeability at the central bank became central.
It is time to utilize Asia’s Treasure Chest

• Why can’t we do it ourselves? Need for a strategic initiative

• Reuse and other efforts need to be complemented by seeking expanded collateral pool from Asia.

• BNY Mellon currently plan to make a proof of concept test on their newly created service called "Pan Asian Collateral Hub (PAC-HUB)".

• The aim of PAC-HUB is using Master Depositary Trust Receipt (under UK law) to utilize Asian Local Currency Repo as collateral in Tri-Party repo trades (mostly in European markets).
Collateral and Repo market in Korea

• Legacy framework for financial stability becomes golden straight jacket in seeking alternatives.
• Market based operations cannot work because of the **FX laws that prohibit KRW to be settled outside of Korea.**
• Korean won government bonds (KGB, KTB, etc.) need to be re-hypothecated to meet OTC margining requirements.
• However, there are restrictions that make it problematic for a Korean company to post physical Won cash to a non-Korean company, including even foreign bank branches in Korea.
• FX control laws that prohibit KRW to be settled outside of Korea: KRW securities are preferred over cash is because the collateral collecting party may re-use the securities collateral in repo.
• For KRW securities to be posted overseas as collateral, not only the above FX control laws need to be lifted, but connection to a global custodian, securities clearing would be necessary.
Q & A
Data, Transparency and Building Repo Capacity in Asia

[Discussant]
Inhyung Lee
Korea Capital Market Institute (KCMI)
Data, Transparency and Building Repo Capacity in Asia

Rick Stinchfield

Finadium
Data, Transparency and Building Repo Capacity in Asia

Rick Stinchfield, Senior Consultant
October 25, 2017
Repo is an important building block for liquid markets

- In fixed income, repo helps create liquidity
- Preferencing local securities as collateral in repo transactions increases demand for those securities
  - An ability to engage in repo lends legitimacy to investors looking for long-term holdings
  - When banks or others are unwilling to accept certain collateral types, this reduces investor interest in those securities
- Governments and market operators can support repo market development by assembling and distributing data to market participants
The Asian tri-party repo market is estimated at US$225 billion, or 5% of the global total.

Geographical breakdown of tri-party by business location and activity, 2017
Total = US$4.65 trillion

- US tri-party repo: 39%
- Europe other products: 35%
- European tri-party repo: 17%
- Asia tri-party repo: 5%
- Asia other products: 0.5%
- US other products: 4%

Source: Finadium
Repo in Asia faces ongoing competition from unsecured funding markets

**Hong Kong dollar interbank transactions – average daily turnover, 2015-2017 (HK$ millions)**

Source: Hong Kong Monetary Authority
Banks in Asia prefer to accept their local government bonds, JGBs or AGBs as repo collateral

Asian banks: which of the following Asian collateral would you accept or like to accept in the future?

(Percent)

Source: Finadium
Two-thirds of surveyed Asian banks would support a standardized basket of pan-Asian collateral

Asian banks: Should Asian regulators create a standardized basket of collateral for all regional market participants?
(Percent)

Yes 62%
No 38%

Source: Finadium
The ICMA European Repo Market Survey is a successful industry data collection effort

European repo market size, 2006 to 2016
(EUR billions)

Source: International Capital Markets Association European Repo Market Survey
European and U.S. industry and government agencies recognize the importance of repo data collection

- Repo data collection is a central theme in the Financial Stability Board’s Standards and Processes for Global Securities Financing Data Collection and Aggregation
- The International Capital Markets Association’s European Repo Survey is used for advocacy, education and official communications with governments
- The Federal Reserve has collected tri-party data since 2010, and recently upgraded their reporting capabilities from an Excel file to a dynamic online tool
- The U.S. Office of Financial Research recently launched a U.S. Money Market Monitor interactive tool that allows drill-downs into U.S. money fund repo holdings
The Federal Reserve has emphasized transparency and analysis in their online tri-party data store

Tri-Party/GCF Repo data page – screen shot

**Volume** - the total volume of tri-party repo transactions by asset class, as well as the number of repos and observations.

**Haircuts** - the percentage overcollateralization of tri-party repos, calculated for each individual transaction. The median and a range (10th to 90th percentile) are reported by asset class.

**Concentration** - the percentage of tri-party repo volume undertaken by the top three dealers (where the top three are identified for each asset class by their total volume of trades).

**GCF Repo** - the total gross volume of GCF Repo transactions by asset class, as well as measures of gross and net totals.

**Tri-party/GCF** - the volume of tri-party repo transactions relative to GCF Repo transactions for those asset classes common to both.

Source: Federal Reserve Bank of New York
Drill down capability helps visualize the relative sizes of government vs. non-government repo markets

Tri-Party/GCF Repo data page – screen shot

Source: Federal Reserve Bank of New York
The U.S. Office of Financial Research presents another version of repo data from Money Market Funds

U.S. MMFs' total investments in repo by collateral type – screen shot

Repo data collection and publication are an important component of building robust Asian repo markets

• Asian authorities can implement a bi-annual survey (ICMA) or require daily/weekly data collection from banks, exchanges and trade repositories
  • Data should be aggregated for anonymity
• Publication of the data could occur on the Asian Bond Market Initiative’s website, sponsored by the Asian Development Bank
• A robust repo market for funding could add a new and vibrant dimension to both Asian financial markets and the global funding business
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Data, Transparency and Building Repo Capacity in Asia

[Discussant]
Inhyung Lee

Korea Capital Market Institute (KCMI)
Korea’s Repo Market: Key Market Features and the Government’s Policy Direction

October 25, 2017

Inhyung Lee
Vice President, KCMI
The Korean repo market consists of the retail market and the institutional market.
- Strict investor and collateral eligibility restrictions are placed on the retail repo market, compared to the institutional repo market (Enforcement Decree of the Financial Investment Services and Capital Markets Act, and Regulations on Financial Investment Business).

All participants in the institutional market engage in repo transactions as a principal, resulting in the absence of intermediation function (except Korea Securities Finance Corp. or KSFC)
- Asset management companies (AMCs or asset managers) directly lend cash to securities firms.
- The volume hedge funds finance through repos keeps growing.

The institutional market, the retail market, and the lending & borrowing market are linked to each other.
- Redemption requests in the retail repo market → Cash-ins in the institutional repo market

Structure of US and European Repo Markets

Korea’s Repo Market Structure

Institutional repo market

Retail repo market

- Redeemed collateral
- Cash
- Collateral

AMCs (investment funds)

Securities firms

Banks

Hedge funds

AMCs (MMFs, funds), Trusts held by banks/securities firms

Redemption of retail repos

Redemption requests in the retail repo market

Cash-ins in the institutional repo market

Trust accounts held by individuals/corporates/financial institutions

Securities firms/banks

Lender of Cash

Interdealer Market

Borrower of Cash

Dealer to Customer Market

Cash

Collateral

Cash

Collateral

Cash

Collateral
Growth in the institutional repo market is attributable largely to the restricted participation of financial institutions in the call market.

- Financial institutions have used repo transactions to replace call transactions.
- The repo market has grown steadily in the midst of stagnant call transactions since 2016.
  → Repos go beyond mere replacement of call transactions.

Securities firms are the largest repo sellers while AMCs are the largest repo purchasers.

- Major repo sellers: Securities companies and asset managers ➔ bond investments via repos (leveraged investing)
- Major repo buyers: AMCs (MMFs) and trust accounts held by banks and securities firms ➔ short-term asset management
- As yet, banks have not played a large role in the domestic repo market. ➔ Banks focus mainly on funding and managing their reserves.
- Hedge funds account for an increasing portion of the repo market in 2017 as fixed income hedge funds become active.

Size of Korean Repo Market

Volume of Repo Transactions by Type of Repo Seller

Note 1: Institutional market
Note 2: Daily average outstanding selling and buying transactions by year
Source: Korea Securities Depository (KSD)
Institutional Repo Market: Collateral, Maturity, and Haircut

- Securities used as collateral in repo transactions: Only high-quality bonds are used as collateral in the Korean repo market.
  - Treasury bonds and monetary stabilization bonds represent over 60% of repo collateral. As for unsecured bonds, high-grade bonds are accepted as collateral for repo transactions.

- Maturity structure of repos: Over-reliance on overnight repos
  - Repos with only one day to maturity take up around 90% of repo transactions by securities firms (repo seller) or AMCs (repo buyer).
  - Overnight repos slightly exceed 50% of repo transactions undertaken by banks (repo buyer).

- Haircut-setting practice: In the institutional repo market, a uniform haircut of 5% (margin requirement) is applied, regardless of the type of borrower or collateral.
  - Haircuts do not vary, depending on the characteristics of collateral securities and the credit risk of borrowers.
  - Borrower or collateral risk is reflected in the repo rate, not the haircut.

Breakdown of Collateral Assets in the Institutional Market

<table>
<thead>
<tr>
<th>Year</th>
<th>주식 및 ETF</th>
<th>회사채</th>
<th>지방채+특수채</th>
<th>주식 및 ETF: Stocks and ETFs</th>
<th>회사채: Corporate bonds</th>
<th>지방채+특수채: Municipal and special-purpose bonds</th>
<th>Note: based on the value of outstanding collateral assets at the end of each month</th>
<th>Source: KSD</th>
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<tr>
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<td>23</td>
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<td>2014년 1월</td>
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<td>2016년 1월</td>
<td>19 19 46 19</td>
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Breakdown of Collateral Assets in the Retail Market

<table>
<thead>
<tr>
<th>Year</th>
<th>회사채</th>
<th>기관</th>
<th>특수채</th>
<th>금융채</th>
<th>국공채</th>
<th>주식 및 ETF: Stocks and ETFs</th>
<th>회사채: Corporate bonds</th>
<th>기관: Government bonds</th>
<th>특수채: Special-purpose bonds</th>
<th>금융채: Financial institution bonds</th>
<th>국공채: Government bonds</th>
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<td>18</td>
</tr>
</tbody>
</table>

Note: based on the value of outstanding collateral assets at the end of each month
Source: Korea Financial Investment Association (KOFIA)
Policy Directions for Domestic Repo Market Improvement

- Domestic repo market experienced quantitative development in the past, yet still has shortfalls in terms of qualitative growth
  - Domestic repo market has demonstrated rapid growth in 2017, and expected to have continuous growth potential

- Whereupon, Korean government is pushing for constructive and long-term policy drive for enhanced repo market efficiency and stability
  - Key challenge: over-reliance on overnight repos, risk management through haircuts, collection of transaction information for transparency and stability enhancement
  - Enactment of Money Market Act(tentative) for repo market as well as overall money market is under process
Policy Directions for Domestic Repo Market Improvement

Key points in the Money Market Act in Korea

- Legislative intent: Integrate regulations for money market in general (no such integrated regulation exists in US and Europe)
- Legislation process to be completed by 2018
- Key point 1: Define money market, including repo market, and its market participants
- Key point 2: Systematic tools for reporting transactions and managing reliability of benchmark rate
  - Reporting of transaction activity: to alleviate the burden of financial institutions, intermediaries (money brokerage corps.) and KSD are obliged to report the transaction activity (Financial institutions are only obliged to report transaction that does not go through intermediaries and KSD)
  - Management of benchmark rate: government should be in control of institutions that determine key benchmark rates, such as CD rate, and legislate the rules that those institutions should abide
- Key point 3: Lay the groundwork for regulations that justify haircut rule for market participants in line with the FSB’s recommendation on the regulatory framework for haircuts
Policy Directions for Domestic Repo Market Improvement

- **Policy directions to diversify maturity structures in repo market**
  - To reduce over-reliance on overnight repos, rather than enforcing regulations, it is better to induce voluntary actions of market participants by supporting market environment which facilitates term repo transactions
  - Basic approach is to cooperate with market participants to establish infrastructure for term repo market
  - KSD is test-operating Korea Treasury Basket Repo (Korea GCF Repo) transaction which resemble GC-Basket in Europe (repo buyer can approve on a comprehensive agreement to allow collateral change within a basket, which enables repo seller to manage flexibly their collateral security over a mid to long term without getting approval from the buyer for each individual withdrawal and exchange of the security)
  - Diversify market participants by inducing tri-party market through discretionary contract with pension funds
  - Strengthen the market making role of KSFC (Korea Securities Finance Corp) which functions as dealer in repo market
Q & A
Coffee Break
Panel Discussion
Repo market in Korea

Joon-hwan Im
I. Collateral market in Korea
II. Characteristics
I. Collateral market in Korea

- BOK operations are important to the development of collateral markets in Korea
  
  1) *eligibility policy*: which securities are borrowed from the BOK
  
  2) *haircuts*: degree of over-collateral
  
  3) *counterparty access policy*
  
  4) *operational parameters:*
I. Mechanism for the development of collateral market

- Security X is eligible
  - Bid-ask spread ↓
    - Liquidity ↑
  - Price of X ↑
    - Reduce liquidity risk premium
  - Demand for X ↑

- Primary market stimulated
  - Real-money investors sell holdings
    - Supply credit ↑
    - Lending / borrowing ↑
- Security Y structured with similar feature to X
1. Collateral market in Korea: Fact

Turnover ratio for securities: 2016

- MBS
- Korean Government Bond
- Agency Bond
- Specific Laws Bond
- MSB
- Financial Bond
- Corporate Bond
- ABS

Turnover ratios: 87.3, 416.8, 56.4, 76.6, 637.8, 197.4, 52.3, 78.2
II. Characteristics

- 1) Dominance of MSB as the BOK’s collateral asset for BOK’s repo transaction
- 2) Increasing supply of collateral asset due to sterilization policy
- 3) Highly conservative collateral policy
  - over-collateral for MBS
  - assets that were both of high credit quality and highly liquid
  - narrow scope of eligible collateral
<table>
<thead>
<tr>
<th>Security type</th>
<th>Haircut</th>
<th>Risk Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>KGB, MSB, Govt guaranteed bonds</td>
<td>2%(2%)</td>
<td>0%</td>
</tr>
<tr>
<td>MBS</td>
<td>4%(4%)</td>
<td>0%</td>
</tr>
<tr>
<td>Corporate bonds- Investment grade</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Corporate bonds- Non-investment grade</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Equities</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Source: The Bank of Korea
II. Characteristics

- Subject to higher haircut in BOK repo transactions
  
  "KGB haircut + 2%"

- Hard to justify: inconsistent with the following facts

  1) Credit rating implication/AAA $\rightarrow$ PD(0.2%) for 1 year

  $104 \rightarrow PD(2.83\%\sim19.80\%)$

  - Korea House Financing Corporation (KHFC) founded by the both ROK and BoK

  2) Zero risk weighting scheme for capital regulation

Cf) International case: US agency MBS haircut = US treasury bond haircut
II. Cross-border Repo Transaction

- Not available mainly due to no-full convertibility of KRW
- Cross-border repo transactions are crisis-mitigation device in emergency
  - full convertibility of KRW is required to do so
Panel Discussion
Thank you.