



EMEAP Repo Markets: State of Play

A Report by the

EMEAP Working Group on Financial Markets

2014

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Introduction

In the aftermath of the Asian financial crisis, there was broad agreement on the need to broaden and deepen financial sectors in the region. One of the key elements of the policy response was the development of local currency bond markets. Since then considerable resources have been dedicated at both local and regional levels to this objective with the initial focus on government bond markets. Regional initiatives include the Asian Bond Fund initiative sponsored by EMEAP and the Asian Bond Market initiative sponsored by ASEAN+3. A global initiative was launched in 2011 under the auspices of the G-20 with support from the World Bank and other regional institutions.¹

In many respects, local currency government bond markets in Asia have made great advances since the late 1990s and in particular over the past five years. Most have experienced solid increases in size, albeit from small bases in many cases. They now boast fully developed yield curves supported by predictable debt issuance programs, dedicated market-makers, reasonably diversified participant universes, markets in key related risk management products and advanced post-trade processes.

Nevertheless, there remains scope for improvement in some aspects of the debt market landscape, most notably in the broadening and deepening of non-government debt markets. Secondary market liquidity in some government debt markets remains less than one might expect given their size.

One area where development has not progressed as far is in securities financing markets, such as provided by repurchase agreements (repos). In major developed financial markets, repo markets are considered critical elements of the landscape. At the highest level, repo markets mobilise liquidity, including liquidity that might not be available on an unsecured basis. The process through which they do this:

- Facilitates market making in the underlying securities markets - dealers can finance inventories of securities and borrow specific securities that they have committed to sell but do not own using repos.
- Supports risk management and collateral management strategies employed by market participants.
- Potentially unlocks hold-to-maturity portfolios of securities held by institutional investors making them accessible to other market participants.

As a result, repo markets enhance the price discovery process in the underlying securities markets and contribute to market depth and resilience.

In many markets, developed and emerging, repos are also an important instrument in the open market operations of central banks and therefore important to the transmission of monetary policy. The deeper these markets are, the more scope they offer central banks in their liquidity management operations.

Going forward, one can expect the importance of secured financing markets such as repo markets to increase. One driver is the shift from unsecured to secured forms of financing that has been underway in developed markets for some years. The increased sensitivity to counterparty risk that

¹ G20 Action Plan to Support the Development of Local Currency Bond Markets, October 2011

followed the recent financial crisis accelerated a process that was arguably already underway in many developed markets in response to the introduction of more sophisticated risk management frameworks. This increased use of secured financing markets is occurring organically but is also being encouraged by regulators and incentivised by regulatory changes. While most markets in Asia were affected only indirectly by the crisis, it is likely that over time similar shifts in demand for secured financing markets will emerge in the region.

Another driver is the focus of regulatory reforms being introduced in the wake of the financial crisis on the collateralisation of exposures and participation in central clearing. These developments will elevate the importance of repo markets which facilitate the efficient transfer and transformation of collateral. As noted, repo markets are also likely to play an important role in ‘unlocking’ large portfolios of securities that have been held away from the market to date. While the pressures from these regulatory changes are yet to materialise in Asia to any great degree, it is reasonable to expect that they will.²

Against this background, the Working Group on Financial Markets undertook a review of repo markets in the region. The objective of the review is to describe the place these markets occupy in member jurisdictions and to better understand the factors behind their development to date and the factors that might be impeding further or quicker development.

This work complements work currently underway under the auspices of the Financial Stability Board (FSB).³ It recognises that notwithstanding the many benefits delivered by active repo markets, repos can be used to undertake activities that, in extreme circumstances, can pose risks to financial system stability. These include the accumulation of excessive leverage and maturity/liquidity transformation outside the banking system, a potential increase in the procyclicality of system leverage and contagion from chains of transactions. A key element of the policy response to the challenge of managing these risks while retaining the benefits of the product is to improve the transparency of these markets. The FSB has conducted a survey of repo and securities lending activity in developed markets as a first step. As part of this review, the WGFM has conducted a similar survey.

This report assesses each of the member markets using a template developed by members for this work. The key features examined include:

- Scale
- Market participants
- Collateral conventions and usage
- Market infrastructure
- Legal arrangements

² Not all of the regulatory measures being introduced promote the use of repos. Banks and others have expressed concerns about the costs imposed on repos by certain regulatory measures such as the leverage ratio. The impact of these measures remains uncertain and, on balance, it appears likely that regulatory reform will favour securities financing arrangements.

³ Strengthening Oversight and Regulation of Shadow Banking – Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos, Financial Stability Board, August 2013.

In broad terms, this template corresponds with the diagnostic framework developed recently as input to the G-20 initiative on the development of local currency bond markets.⁴ The report also highlights any specific impediments to market development.

The following section of the report discusses the availability of information on regional repo markets. This section draws on the results of the WGFM survey. The next section provides comparative analysis of regional repo markets based on information provided by member central banks. Where possible, themes common to all or several markets are highlighted. Discussion of individual markets is presented in the following sections. Some concluding remarks complete the report.

⁴ Local Currency Bond Markets – A Diagnostic Framework, IMF/World Bank/EBRD/OECD, July 2013

Access to Information on EMEAP Repo Markets

Reflecting their OTC status, less information has been available about repo markets than other aspects of the financial system. This is true even for markets in advanced economies. In recent years, efforts by both regulators and industry have improved the transparency of these markets but scope remains for further progress. As noted, the issue of transparency in markets for repos and securities lending has been taken up by the FSB as part of its work on shadow banking. The thrust of this work is to improve the granularity and timeliness of information that is available to regulators.

As part of this work on repo markets in the region, the Working Group on Financial Markets conducted a survey of members. The survey, which was constructed to complement a similar survey conducted by the FSB for developed markets, looked at whether information on repo markets is collected, how it is collected and what information is collected or otherwise available. The results of this process are presented in Tables 1 and 2.

All jurisdictions currently have some form of regular data gathering process. Those that do not conduct regular surveys, have access to transaction level data through settlement systems. In the majority of cases, data is collected by regulators. In Malaysia, data is reported directly to the exchange and in Thailand it is reported directly to the local industry body (ThaiBMA) on a post-trade basis. In Japan and Korea, both regulators and private sector bodies collect data through different surveys. In almost all cases, participation in these data gathering processes is mandatory. Only in Australia and Japan is the participation in the surveys conducted by the central bank voluntary.

The information obtained through these surveys is broadly comparable with that for the markets surveyed by the FSB. Most jurisdictions collect data on the size of outstanding positions, tenor, collateral class and some counterparty breakdown. As in the developed markets, most EMEAP jurisdictions do not collect data on haircuts. The exception is Japan (annual survey) and the Philippines. Further detail on arrangements by jurisdiction follow:

Australia

Each quarter, the RBA surveys price makers in Australian dollar-denominated government securities. The survey asks for each institution's outstanding repos in government-related securities and the outstanding positions of their bond trading desks (excluding the value of securities held by the institution for liquidity purposes). The main objective of the survey is to identify users and suppliers of repo funding. The prudential regulator (APRA) requires locally incorporated banks, foreign authorised deposit taking institutions and special service providers to report repo and securities lending transactions on a quarterly basis.

The Australian Financial Markets Association (AFMA) publishes the Australian Financial Markets Report annually. This report provides average outstanding repo, by collateral class, counterparty and tenor. AFMA also publishes annual turnover in the repo market, broken down by collateral class and counterparty.

Table 1 Existing Repo Market Data Collection Methods

	Are there any repo market surveys?	Does a regulator (R) or Private Sector body (PS) collect data?	Frequency of data*	Access to underlying data**	Survey Participants: LB - Banks SD - Dealers O - Other	Voluntary (V) or Required (R) reporting?
Australia	Y	R ⁵	Q	Y, I	LB, SD	V
China	Y	R	D	Y, I	LB, SD, O	R
Hong Kong	Y	R	M	Y, I	LB ⁶	R
Indonesia	Y	R ⁷	T	Y, I	LB, O ⁸	R
Japan	Y	R, PS ⁹	M,A	Y, I	LB, SD, O ¹⁰	R, V ¹¹
Korea	Y	R, PS ¹²	D	Y, I ¹³	LB, SD, O ¹⁴	R
Malaysia	Y	PS ¹⁵	T	Y, I	LB, SD	R
New Zealand	Y	R ¹⁶	D,W	Y, I	LB	R
Philippines	Y	R ¹⁷	T	Y, A ¹⁸	O ¹⁹	R ²⁰
Singapore	Y	R	M	Y, I	LB, SD, O	R
Thailand	Y	PS ²¹	T	Y, T	SD, O ²²	R ²³

* T – transactional; D – daily; W – weekly; M – monthly; Q – quarterly; S – semi-annual; A – annual

** T – transactional level data; I – institutional level data; A – aggregate only

⁵ The RBA conducts a repo market survey.

⁶ All authorised institutions, which include both local and foreign banks, recognised under Hong Kong’s Banking Ordinance are required to report.

⁷ BI has access to BI bill and Government security backed repos through settlements systems. A market survey was conducted in 2010 in preparation for drafting an Indonesian annexed GMRA.

⁸ Other includes sub-registry members (bank divisions that function as a custodian).

⁹ The BoJ conducts an annual survey and the Japan Securities Dealers Association publishes monthly repo market statistics.

¹⁰ Other includes insurance companies, asset management companies, trust banks and money market brokers.

¹¹ Mandatory reporting to Japan Securities Dealers Association for the monthly statistics; voluntary reporting to the BoJ for the annual survey

¹² Data are collected by a number of bodies: Korea Financial Investment Association collect OTC transactions; Korea Exchange collect exchange-traded transactions; and Korea Securities Depository collect all transactions except bilateral direct transactions.

¹³ The BoK has access to institutional level data via request to the Korea Securities Depository.

¹⁴ Other includes asset management companies, insurance companies and security trusts.

¹⁵ Market participants report trades to the electronic platform operated by Bursa Malaysia within 10 minutes of the conclusion of the deal.

¹⁶ The RBNZ conducts a daily cash survey as well as a weekly government bond turnover survey.

¹⁷ The Philippine Dealing and Exchange Corp collects data on a transactional basis.

¹⁸ Aggregate but can request institutional data

¹⁹ Only participants that can access the PDEX repo program, which include banks, trust divisions and non-bank financial institutions

²⁰ The Philippine Dealing and Exchange Corp collects data on a transactional basis.

²¹ All dealers report trades to the Thai Bond Market Association within 30 minutes of the transaction, as dictated under regulations.

²² All institutions holding a dealer license as well as some other participants (commercial banks and state agency banks) report their transactions.

²³ Dealer licensees are required, while reporting is voluntary for other repo market participants.

Table 2 Local Repo Market Information Currently Available

	Size of book (value of cash legs)	Currency	Tenor Composition	Collateral Asset Class	Haircut Ranges	Counterparty Disaggregation	Ability to re-use/re- hypothecate
Australia	Y	N	N	Y	N	Y ²⁴	Y
China	Y	N	Y	Y ²⁵	N	N	N
Hong Kong	Y	Y	N	N	N	Y ²⁶	Y
Indonesia	Y ²⁷	N	Y	Y ²⁸	N	Y ²⁹	Y
Japan	Y	N ³⁰	Y	Y ³¹	Y	Y ³²	N
Korea	Y	Y ³³	Y	Y ³⁴	N	Y ³⁵	Y
Malaysia	Y	Y	Y	Y	N	Y ³⁶	Y
New Zealand	N ³⁷	Y ³⁸	N	Y ³⁹	Y ⁴⁰	N	Y
Philippines	N	Y ⁴¹	Y	N	Y	N	N
Singapore	Y	Y ⁴²	N	Y	N	Y	N
Thailand	Y ⁴³	Y ⁴⁴	Y	Y	N	Y ⁴⁵	Y

²⁴ Counterparty categories include: Surveyed onshore/offshore dealers; Non-surveyed other domestic banks, security dealers, nominees and investment funds; Non-surveyed offshore financial institutions; Domestic central bank.

²⁵ Collateral asset classes include: Government debt; Corporate debt.

²⁶ Counterparty categories include: Authorised institutions in Hong Kong; Banks outside Hong Kong; Non-bank customers.

²⁷ Aggregate positions can be calculated from transaction level data.

²⁸ Collateral asset classes include: BI bills; Government securities.

²⁹ Exposures can be calculated from transaction level data. Counterparty categories include: Banks; Mutual funds; Insurance companies; Securities companies.

³⁰ Yen only

³¹ Collateral asset classes include: JGBs; Corporate bonds.

³² Counterparty categories include: City banks; Securities dealers; Trust banks; Money market brokers; others.

³³ Currency split includes: Korean won, US dollar, Japanese yen and euro.

³⁴ Collateral asset classes include: Government bonds; Monetary Stabilisation bonds; Corporate bonds; Special bonds; Bank debentures.

³⁵ Counterparty categories include: Domestic banks; Securities companies; Securities trusts; Asset management companies and others.

³⁶ Individual counterparty names are available at the transaction level.

³⁷ Transaction level data is available for O/N repo market transactions. This data includes Size of Book (value of cash legs) and Counterparty Disaggregation.

³⁸ All transactions are in NZ dollars.

³⁹ Government debt only

⁴⁰ Government debt is the only collateral used and no haircut is applied.

⁴¹ All transactions are in Philippine peso.

⁴² SGS and MAS bills only

⁴³ Can be calculated from transaction level data

⁴⁴ All transactions are in Thai baht

⁴⁵ Counterparty categories include: Dealer; Non-dealer licensed bank; Non-financial corporate; Insurance company; Asset management company; Individual investor

China

Comprehensive statistics are available in China on the inter-bank bond repo market. Information, such as monthly repo transaction volume, outstanding repo volume, average repo interest rate, distribution of participants, distributions of maturities is available to all market participants. Regulatory authorities can also obtain information from the trading, clearing and settlement platform on a daily basis if required.

Indonesia

Bank Indonesia has access to repo transactions data with government bonds and central bank bills as collateral. The data is automatically captured in the local settlement system (BI-SSSS) as Bank Indonesia conducts the settlement of these securities. The data includes repo counterparties, size, tenor and rate. There is also a survey of the repo market but this is not conducted on a regular basis. The last survey was in 2010.

Hong Kong

All authorised institutions (AIs) are required to report on their balance sheet the amount payable under repo transactions and the amount receivable under reverse repo transactions at each month-end (gross value of cash leg). They must also classify the repos into three categories – Hong Kong Dollar, US Dollar, and all other currencies – for reporting purposes. The data are collected monthly by the HKMA in its capacity as the banking regulator of Hong Kong. It should be noted that only AIs which are regulated by the HKMA are required to report such data. Non-bank financial institutions are not covered by the survey.

Japan

The Bank of Japan conducts a comprehensive survey of the local money market (biennially from 2008 to 2012 and annually from 2013). The survey collects data on the repo market. The Japan Securities Dealers Association releases information on repo market and securities lending activity provided by its members on a monthly basis.

Korea

The Korea Financial Investment Association (KOFIA) collects and publishes daily data on repo transactions. This data covers local banks, securities companies, asset management companies, insurance companies and securities trusts. The available information include the size of individual market participants' repo books, the currency of transactions, tenor composition, asset classes of repo transaction collateral, a counterparty breakdown and the size of exposures.

Malaysia

In Malaysia, Bank Negara Malaysia (BNM) requires financial institutions to report OTC repo transactions within 10 minutes of the transaction to the Electronic Trading Platform (ETP), a system run by Bursa Malaysia. The ETP also serves as a comprehensive dissemination system for secondary bond market trade information. The information collected via ETP is transmitted on a real-time basis to the respective regulators ie: BNM and Securities Commission. Information on repo trades (repo

rate, volume, tenor & counterparty type) is also made available to the public on a near real-time basis via Bloomberg, Reuters and the Bond Info Hub website.

New Zealand

The Reserve Bank collects daily data in its Interbank Cash Survey on General Collateral (GC) repo trades from the major interbank dealers who have settlement accounts at the Reserve Bank. The data gathered only includes repo trades with a term of 1 day and excludes repo trades where the intention of the trade is driven by demand or supply for a specific bond rather than cash funding/lending against GC. This data is primarily gathered for monetary policy implementation purposes. The data fields include counterparty, volume, interest rate and secured/unsecured status.

The Reserve Bank also collects and publishes weekly data on government bond turnover. One side of the dollar amount of bonds transacted is reported and split into two categories, non-repo and repo/all other. The repo/all other category includes transactions with the central bank and intercompany transactions between subsidiaries which can sometimes overstate the numbers.

Philippines

The PDEX publishes on its website a summary of all the repo trades on a daily basis. The report shows the volume, tenor and the rates of done transactions on an aggregate basis. No other regulatory reporting is required to be submitted since the platform is able to capture data on all transactions.

Singapore

All SGS and MAS bill transactions are settled through the MAS electronic payment system (MEPS+). The MAS has access to transaction level repo data via the MEPS+. This data is used to calculate average daily repo turnover and the absolute size of the SGS and MAS bill repo market. In addition, dealers who have customer holdings are also required to submit a monthly report to the MAS. This report provides a breakdown of the customer holdings in SGS and MAS Bills by major investor categories.

Thailand

All dealers are obliged by the SEC to report their transactions to the Thai Bond Market Association (ThaiBMA). Some other market participants also report their transactions to the ThaiBMA for compilation and dissemination.

The reporting turnaround time for repo transactions, as well as other bond related transactions is within 30 minutes after trade execution. However, for repo transactions, the aggregation of data is disseminated to regulators and market participants only once, at the end of the day.

While the transaction volume of repo is published daily, the outstanding value is calculated and published on a weekly basis, with historical time series data available to download. Breakdowns of repo transactions are also available in terms of currency, tenor, counterparty type and size of exposure.

A Comparative Analysis of Regional Markets

In this section, EMEAP repo markets are compared using several key measures of development including size, collateral complexity, function, infrastructure, legal and tax arrangements. This information is drawn from the sections on individual markets that follow this one. This section concludes with some observations on impediments to market development and initiatives underway to address them.

A comparison of the size of EMEAP repo markets, normalised for the size of the underlying markets, is presented in Table 3. This measure indicates that repo markets in several EMEAP jurisdictions are small, particularly if outstanding positions with central banks are excluded. This is even true for some jurisdictions with mature and sophisticated financial markets like Singapore and New Zealand. It is also true for Hong Kong although data on repos outstanding is not publically available in Hong Kong.

**Table 3: Size of EMEAP Repo Markets
(Repos outstanding at end 2013)**

	As a percentage of bonds outstanding	As a percentage of bonds outstanding (excluding central bank repo)
UK	43.5*	42.6*
USA	16.6 ⁴⁶	16.4
Australia ⁴⁷	18.6	14.0
China ⁴⁸	10.5*	10.5*
Indonesia	0.4	0.0
Japan ⁴⁹	15.2	15.2
Korea ⁵⁰	11.3	9.9
Malaysia	3.1	1.0
New Zealand	0.9	0.6
Philippines	7.9	0.1
Singapore ⁵¹	10.1	1.8
Thailand ⁵²	18.6	7.2

* as at end 2012

In addition to the general observation that repo markets are small in many EMEAP jurisdictions, there is also little evidence of market deepening. The charts below show the level of turnover in

⁴⁶ Includes Treasury, Agency, Agency MBS and Corporate bonds in both the numerator and denominator.

Treasury repos as a percentage of outstanding Treasury debt are 31.0 per cent.

⁴⁷ Includes only government and state government repo.

⁴⁸ Includes government and corporate debt.

⁴⁹ Includes JGBs and Treasury bills in the denominator.

⁵⁰ Includes only KTBs, MSBs, Municipal and special bonds in both the numerator and denominator.

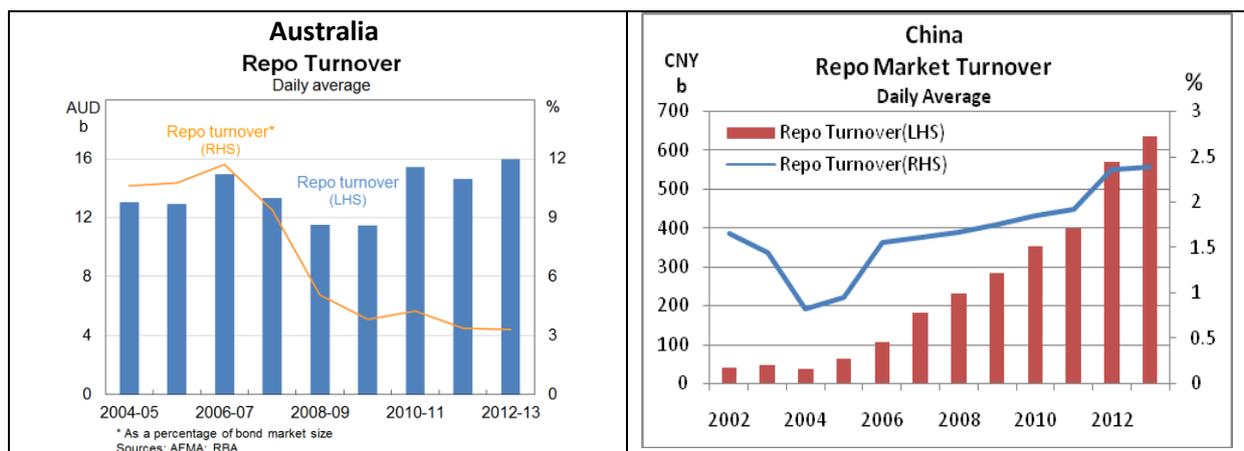
⁵¹ Includes SGS T-bills in both the numerator and denominator.

⁵² Includes Government bonds, Bank of Thailand bonds and State-owned enterprise bonds in the denominator.

EMEAP repo markets and the level of turnover relative to the size of the underlying bond market in each case.⁵³ In most cases, the level of turnover has not shown any trend growth in recent years.⁵⁴ In the case of the Philippines, there has in fact been a decline in turnover. Turnover in repo markets relative to the size of the underlying bond markets is low in many markets. Moreover, looking through year to year noise, there is little sign of this measure of depth increasing in most markets. In a few markets, it has clearly declined.

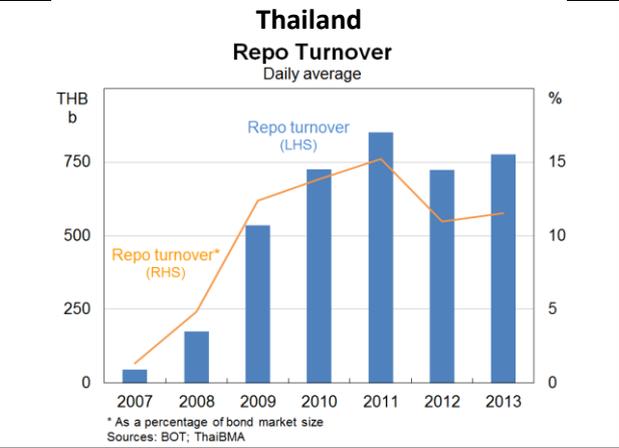
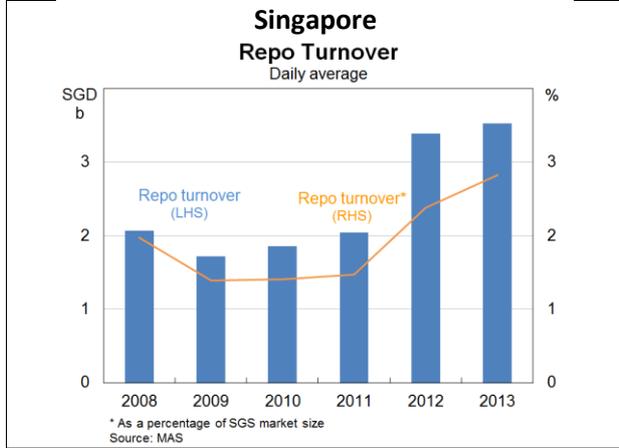
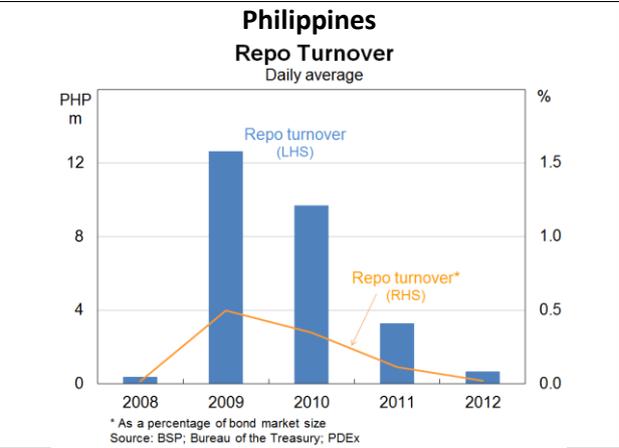
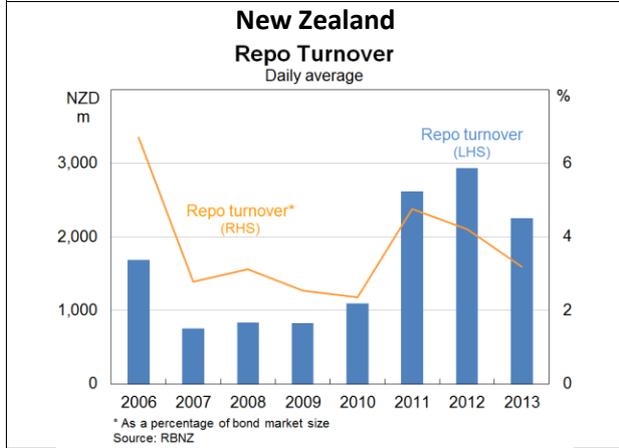
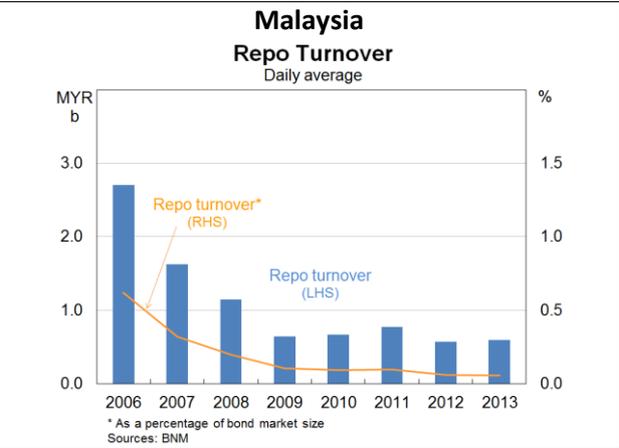
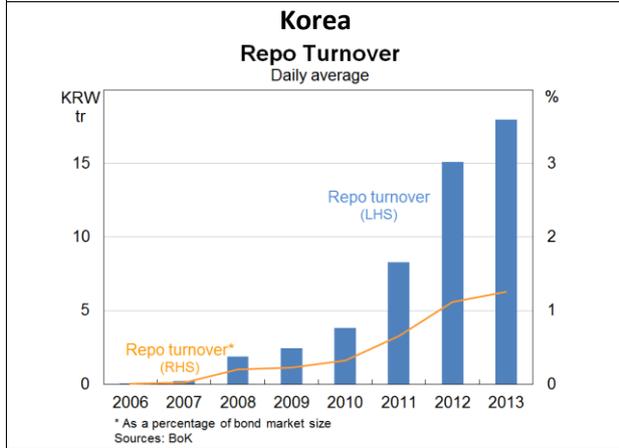
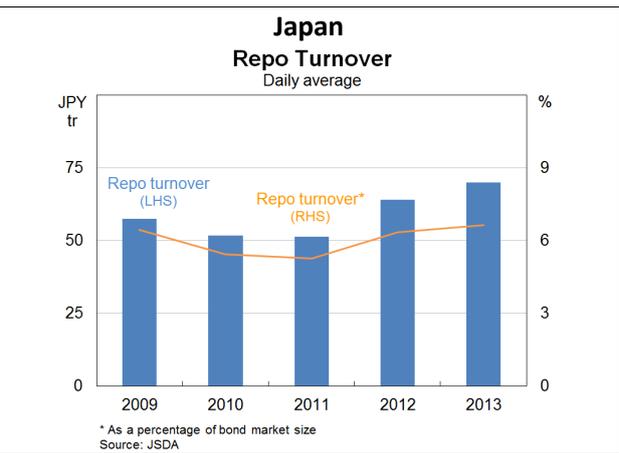
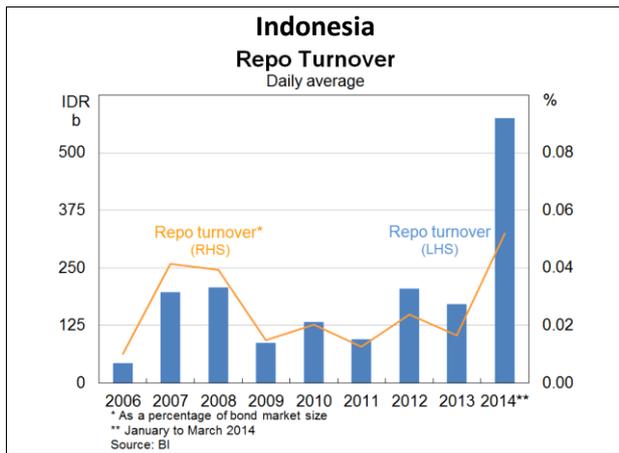
There are three exceptions to these trends, China, Korea and Thailand. The China case is largely explained by very strong growth in the underlying bond markets coupled with the establishment of dedicated market infrastructure and legal framework. In the case of Korea, the underlying fundamentals have also been supportive but the measure is also picking up a decline in average tenor in response to regulatory changes. In Thailand, there has been a marked increase in repo activity since 2008 in response to the closure by Bank of Thailand of an alternative market sponsored by the central bank.

In addition, an initiative launched by Bank Indonesia in December 2013 has resulted in a sharp increase in turnover in the early part of 2014. The initiative involved enlisting the support of key banks for a new standardised legal master agreement. The results have been very promising to date.



⁵³ Repo turnover data is not collected in Hong Kong.

⁵⁴ Turnover analysis is always vulnerable to shifts in average tenors and also differences in average tenors across markets. In this case, however, most markets have experienced either little change or a tendency to shorter tenors over recent years. Therefore the observation that turnover has not increased materially is arguably a reasonably sound one.



Market Structure

The complexity of roles carried out by different participants in different markets coupled with a lack of precise data makes drawing cross-market comparisons in these markets quite challenging. It is reasonably clear, however, that most EMEAP repo markets are used by a range of sell and buy side entities. It is not obvious from this initial analysis that a lack of participant diversity is a major factor behind the lack of growth in these markets.

Table 4: Market participants

	Central bank	Banks	Securities dealers	Other	Foreign participation permitted
Australia	Y	Y	Y	Y ⁵⁵	Y
China	Y	Y	Y	Y ⁵⁶	N ⁵⁷
Hong Kong	Y	Y	Y	Y ⁵⁸	Y
Indonesia	Y	Y	Y	Y ⁵⁹	Y
Japan	Y	Y	Y	Y ⁶⁰	Y
Korea	Y	Y	Y	Y ⁶¹	N
Malaysia	Y	Y	Y	Y ⁶²	Y ⁶³
New Zealand	Y ⁶⁴	Y	N	Y ⁶⁵	Y
Philippines	Y	Y	Y	Y ⁶⁶	Y
Singapore	Y	Y	Y	Y	Y
Thailand	Y	Y	Y	Y ⁶⁷	N

As elsewhere, central banks are often significant participants in EMEAP repo markets as result of using the product in open market operations and lending facilities. In some markets, repos involving the central bank account for the bulk of outstanding positions (Table 1). These include Malaysia, the Philippines, Singapore and Thailand.

Not surprisingly, banks and securities firms are the major private sector participants and use repos in their roles as bond market price makers to fund and manage positions, as well as more broadly for short term liquidity and inventory management. The extent of participation by institutional investors (insurance companies, pension funds, investment funds and money market funds) and corporates

⁵⁵ Domestic nominee companies and investment funds.

⁵⁶ Includes insurance companies and pension funds.

⁵⁷ Currently, Bank of China (Hong Kong) is the only foreign entity permitted to enter the repo market.

⁵⁸ There are no restrictions on individuals or institutions entering into repo transactions.

⁵⁹ Insurance and mutual funds.

⁶⁰ Money market brokers, trust banks and Insurance companies.

⁶¹ Individuals, corporations and trusts.

⁶² Pension funds, insurance companies and other corporates (at least one principal to the repo transaction must be a licensed financial institution under the Financial Services Act)

⁶³ Non-resident institutions are eligible provided they have a resident counterparty. Foreign exchange regulations limit outstanding positions to RM10 million.

⁶⁴ Smaller local banks and offshore banks tend to bid in RBNZ's open market operations as the collateral requirements are less restrictive

⁶⁵ Includes nominee companies and investment funds.

⁶⁶ Trust entities

⁶⁷ Other institutions and individuals

varies across jurisdictions. In general, the larger and more developed repo markets appear to have greater buy-side involvement. Examples include Australia, China, Japan and Korea. Hong Kong, Indonesia, the Philippines and Singapore are examples of markets where the buy-side appears to be less involved.

Most jurisdictions permit participation by non-residents although participation might be conditional (Malaysia). China, Korea and Thailand do not allow non-residents to engage in local currency repo.

Collateral

Another measure of the development of secured financing markets is the breadth of collateral used and the sophistication of collateral management practices.

Sovereign debt accounts for the bulk of the collateral traded in even the most developed repo markets. This reflects the superior credit, liquidity and price transparency of this asset class. This is particularly true in Asia where non-government securities markets are in general less developed.

Across EMEAP markets, sovereign debt (including central bank issues in some cases) makes up the vast majority of repo collateral and in several markets it effectively accounts for 100 per cent of repo collateral (Japan⁶⁸, Malaysia, New Zealand, Singapore and Thailand). In Korea, a jurisdiction with a large non-government market, sovereign securities account for around 60 per cent of repo collateral. In Thailand, in contrast, all collateral is sovereign debt even though Thailand does have a relatively large non-government debt market.

With the exception of New Zealand and China, collateral substitution on outstanding repos is a market feature. In New Zealand, the central bank accepts the substitution of collateral but market participants generally do not in practice. The conventions on collateral substitution vary from market to market. Most jurisdictions also allow the re-hypothecation of collateral.

⁶⁸ Repo transactions backed by equity and commercial paper are not included (market size is about JPY 6 trillion and 3 trillion respectively).

Table 5: Collateral

	Securities eligible for repo				Ability to substitute collateral	Ability to re-hypothecate
	Sovereign	Quasi-sovereign	Corporate	Other		
Australia	Y	Y	Y ⁶⁹	Y ⁷⁰	Y ⁷¹	Y
China	Y	Y ⁷²	Y	Y ⁷³	N	N
Hong Kong	Y ⁷⁴	N	Y	Y ⁷⁵	Y	Y
Indonesia	Y ⁷⁶	N	Y	N	Y	Y
Japan	Y	Y	Y	Y	Y ⁷⁷	Y
Korea	Y ⁷⁸	N	Y ⁷⁹	N	Y	Y
Malaysia	Y ⁸⁰	Y	Y	Y ⁸¹	Y	Y
New Zealand	Y	N	N	N	N ⁸²	Y
Philippines	Y ⁸³	Y ⁸⁴	Y ⁸⁵	N	Y	N
Singapore	Y ⁸⁶	N	N	N	Y	N
Thailand	Y ⁸⁷	Y ⁸⁸	Y ⁸⁹	N	Y	Y

⁶⁹ Includes securities issued by Authorised Deposit-taking Institutions that meet specific criteria.

⁷⁰ AAA-rated supranational and foreign sovereign agency debt, AAA-rated Foreign Government-guaranteed debt and securities with an Australian Government guarantee as well as asset-backed securities that meet specific criteria.

⁷¹ Australian Financial Markets Association convention is one substitution per week per repo.

⁷² Financial bonds issued by policy banks.

⁷³ All bonds traded in the inter-bank market are eligible for use in repo.

⁷⁴ Includes Exchange Fund Bills and Notes (central bank paper) as well as government bonds.

⁷⁵ Includes asset-backed securities.

⁷⁶ Central bank certificates and government bonds.

⁷⁷ Substitution is applicable only for only a part of shin *gensaki* repo which accounts for only 6.3% of total repo transactions.

⁷⁸ Includes Korean Treasury bonds and monetary stabilisation bonds issued by the Bank of Korea.

⁷⁹ Investment grade bonds (those rated BBB or higher), issued or guaranteed by designated financial institutions or guaranteed by the central or local government.

⁸⁰ Sovereign securities include conventional and Islamic securities issued by the Government of Malaysia, Bank Negara Malaysia and BNM Sukuk Berhad (a special purpose vehicle created to issue Islamic bonds).

⁸¹ Includes negotiable instruments of deposit, banker's acceptances and any other types of financial instruments provided that the securities must not be convertible and must be above investment grade at the inception of the repo transaction.

⁸² The RBNZ will accept requests for collateral substitution on any of its outstanding repo transactions. The general market do not substitute collateral however there are some banks that will accept requests.

⁸³ Includes securities issued by Republic of the Philippines Bureau of the Treasury (both PHP and dollar-denominated and the Bangko Sentral ng Pilipinas).

⁸⁴ Bonds issued by the municipal and local government units of the Republic of the Philippines and as listed on the PDEX (Philippine Dealing and Exchange Corp).

⁸⁵ PHP and dollar-denominated private corporate debt securities listed on the PDEX (Philippine Dealing and Exchange Corp).

⁸⁶ Includes Singapore Government Securities and those issued by the Monetary Authority of Singapore.

⁸⁷ Includes Thai Government securities and securities issued by the Bank of Thailand.

⁸⁸ Securities issued by state-owned enterprises.

⁸⁹ Corporate bonds rated BBB and above with high levels of liquidity according to guidelines issued by the Bank of Thailand and the Securities and Exchange Commission.

Market Infrastructure

In general, repo market infrastructure is of a high standard. Trade execution practices vary across the region with bilateral direct execution and indirect execution via brokers the most common. There are electronic trading platforms for repos in several markets (Australia, China, Japan, Korea, Malaysia and the Philippines) with all execution channelled through the ETPs in China and the Philippines.

Price transparency varies also. Not surprisingly, the most developed markets and those based around ETPs tend to offer the highest standard. Brokers play an important role in execution and price dissemination in a number of markets including Australia, Hong Kong, Japan, Korea and New Zealand.

Post-trade processes in particular are world class in most of these markets. This reflects the efforts of regulators and industry to develop bond markets following the Asian Crisis. Tri-party arrangements are available in several jurisdictions although bilateral settlement and risk management remains the dominant model across the region.

Table 6: Repo Market Infrastructure

	Electronic trading platform	Access to real time pricing	Settlement of repo	DvP settlement	Tri-party
Australia	Y	Y	Outright	Y	Y ⁹⁰
China	Y	Y	Outright and pledged ⁹¹	Y	N
Hong Kong	N	N	Outright	Y	Y
Indonesia	N	N	Outright	Y	N
Japan	Y ⁹²	Y	Outright	Y	Y ⁹³
Korea	Y	N	Outright and hold-in-custody ⁹⁴	Y	Y ⁹⁵
Malaysia	Y	Y	Outright	Y	N
New Zealand	N	Y	Outright	Y	N
Philippines	Y	Y	Outright	Y	Y
Singapore	N	Y	Outright	Y	N
Thailand	N	N	Outright	Y	Y

⁹⁰ Triparty solution introduced by the local exchange in early 2014.

⁹¹ More than 90 per cent of transactions in China's repo market are pledged repo, with the remaining settled outright with DvP settlement.

⁹² Electronic trading platform is run by a private brokers' broker.

⁹³ A major bank began offering tri-party repo services in 2011.

⁹⁴ Settlement in the customer repo market is in the form of a hold-in-custody arrangement, while settlement between institutions is through DvP.

⁹⁵ Triparty repo is used in the institutional market, but not in the customer market.

Legal and Tax Arrangements

Most jurisdictions use the Global Master Repurchase Agreement (GMRA) with a local annex as the primary legal documentation for repo transactions. As such, the standard risk mitigation and default protocols used in the developed markets are also standard in EMEAP markets. Three jurisdictions use local legal documentation (China, Indonesia and the Philippines). In China, all participants must use the same master agreement which features many of the same key risk management protocols as the GMRA. The same type of documentation is available in Indonesia but is not compulsory and is apparently not widely used. Indonesia is in the process of introducing a GMRA for the local market. All participants in the Philippines are currently subject to the local agreement.

In most cases, repos are treated as loans for tax purposes. This allows income derived from the trades to be treated as interest income. In general, this treatment is considered more conducive to market activity than when repos are treated as outright transactions. The latter treatment raises the possibility that valuation gains on the transfer of title will be taxed as realised gains. This can be a deterrent to market participants. One jurisdiction where tax treatment is considered to have been an impediment to market development is the Philippines.

Table 7: Legal and Tax Arrangements

	Use of GMRA	Tax Treatment Basis	Withholding Tax
Australia	Y	Loan	Y
China	N	Loan and Outright ⁹⁶	N
Hong Kong	Y	Loan ⁹⁷	N
Indonesia	N ⁹⁸	Loan ⁹⁹	Y ¹⁰⁰
Japan	Y ¹⁰¹	Loan	N
Korea	Y ¹⁰²	Loan	Y
Malaysia	Y	Loan	N
New Zealand	Y ¹⁰³	Outright	N ¹⁰⁴
Philippines	N	Loan	Y
Singapore	Y	Loan	N
Thailand	Y ¹⁰⁵	Loan	N

⁹⁶ The repo interest of pledged repo is taxed as interest income, treating the repo as a loan. Repo interest from outright repos is taxed according to the purpose of the trade.

⁹⁷ Transactions involving EFBNs and government bonds do not attract stamp duty taxes, even for outright purchases and sales.

⁹⁸ GMRA is in draft stages

⁹⁹ Repos contracted with government and central bank securities are treated as a loan. All other repos are treated as an outright purchase and sale of securities and are taxed as a capital gain.

¹⁰⁰ Only for repo with collateral other than government or central bank securities. Repos with government or central bank securities are exempt from withholding tax.

¹⁰¹ In addition to the original GMRA, local contracts (based on GMRA) are also used.

¹⁰² GMRAs are used in the institutional market, but not in the customer market

¹⁰³ The market uses a combination of ISDA and GMRA.

¹⁰⁴ No withholding tax as repo interest is not considered interest income for tax purposes.

¹⁰⁵ Also ThaiMRA, repo with the Bank of Thailand is not under the GMRA.

Market Development Impediments and Opportunities

As noted, several of the EMEAP repo markets are not as large or as active as one might expect given the size of the underlying securities markets and the advances made in the development of other parts of the financial markets landscape. A review of each of these markets suggests that with one or two exceptions, this cannot be attributed to impediments created by legal or tax arrangements. Similarly, there is no evidence to suggest that inadequate pre or post trade infrastructure is the issue. As most of these jurisdictions have been focussed on capital markets development over the last decade and a half, market infrastructure is typically of a high standard.

Based on the information provided by member central banks about their own markets, there would appear to be a few factors, common to several jurisdictions that have contributed to the relative lack of scale in these markets.

- Over the period when there has been a focus on developing repo markets as part of the broader bond market development effort, many of the member financial systems have experienced ample liquidity conditions. Ready access to liquidity to fund balance sheet activities has made it more difficult to encourage a transition from unsecured to secured funding. This is particularly important as banks are typically the largest bond market participants and often market makers.
- Within each local market the largest participants, typically domestic banks, have long standing relationships with each other and a history of performance on obligations. As a result they are comfortable continuing to fund interbank on an unsecured basis. In recent years there has also been a broad improvement in the credit quality of financial institutions in the region.
- In many jurisdictions, funding through securities repo has actually been more expensive than funding on an unsecured basis, at least for short terms.

Against this background, there has not been a strong case for major market participants, at least the banks, to change from simple, familiar and relatively cost effective unsecured funding methods.

Only a few members cited specific local factors that are perceived to be holding back market development. In Indonesia, it was noted that there is a stigma associated with funding through repo that originates in the traditional reliance on the deep interbank market for unsecured funding. Uncertainty about the treatment of collateral in bankruptcy proceedings was also cited.

In Malaysia, it appears reasonably clear that the decline in repo activity from 2006 was due, at least in part, to the introduction of guidance that signalled the end of hold-in-custody repos and imposed more demanding risk management and legal arrangements. In particular, corporates who had been a significant part of the market withdrew at that point.

In the Philippines, several aspects of the market established in late 2008 appear to have caused problems for participants. These include the use of a local master agreement rather than the GMRA, restrictions on the re-use of collateral and uncertainty over tax treatment. In addition, repos are subject to reserve requirements in the Philippines. Tax is also cited as a factor in Thailand, even

though the market has grown there. A tax on funding transactions (including repos) between banks and non-banks has negatively impacted this sector of the market.

There are initiatives underway in several markets aimed at facilitating repo activity:

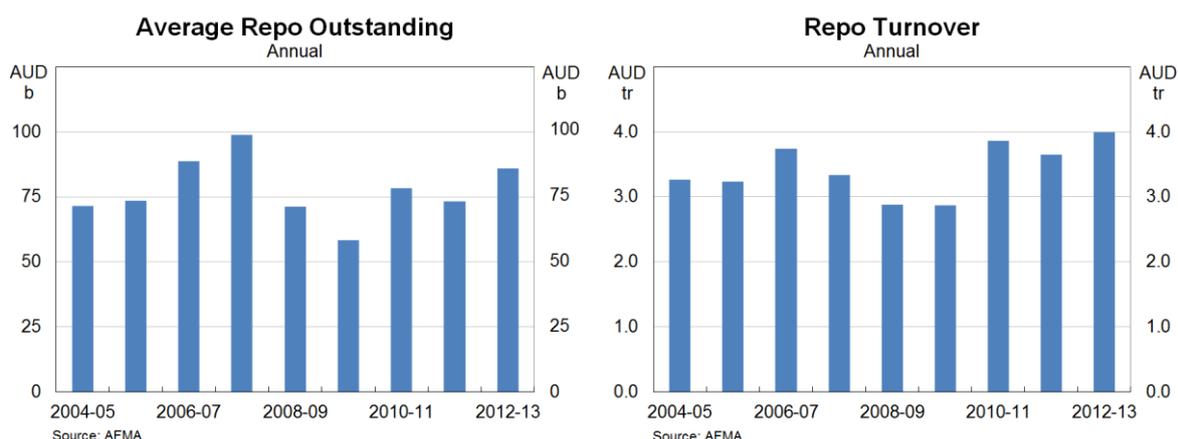
- In Australia, the RBA is moving its open market operations to an electronic trading platform to increase efficiency and transparency. The ASX in Australia has recently introduced a tri-party repo platform. Tri-party solutions are being researched in China and Indonesia.
- In the Philippines, industry is establishing an alternative repo model for the interbank market that uses a buy-sell back structure. These transactions will not be subject to reserve requirements, will be underpinned by the GMRA and will allow collateral re-use.
- In Malaysia, BNM is going to introduce an education program for corporate treasuries to facilitate their engagement with the repo market. BNM is also working on an initiative to make foreign currency funding via repo available in Malaysia.
- In Indonesia, BI has launched an initiative to increase participation in repo market using a number of major banks to launch and socialise a new standardised master agreement. This initiative has already produced positive outcomes.
- In Singapore, MAS is establishing a corporate bond repo facility in an effort to underpin liquidity in that market.

Single Market Analysis

Australia

The Reserve Bank of Australia (RBA) together with price makers in Australian dollar-denominated government debt securities are the major participants in the Australian repo market. With an annual turnover of more than AUD3.5 trillion, the repo market helps ensure the smooth functioning of the debt market. It also serves as the main conduit through which the RBA conducts open market operations (OMOs). Currently over 90% of repos outstanding in Australia are in government-related securities, with the majority contracted as overnight repo. As of the end of February 2013, the average amount of general collateral repos outstanding was around AUD80 billion (including securities lending and excluding internal transactions).

The Australian repo market, as measured by the average amount of repos outstanding, has been broadly unchanged over recent years at around AUD70 billion. Similarly, there has been little trend growth or decline in turnover in the repo market in recent years with turnover of between AUD3.5 and AUD4.0 trillion.



The Australian market has always been dominated by repos contracted against government-related securities. This was the case even in the early to mid-2000s when consecutive Australian Government budget surpluses led to a large decrease in government securities outstanding.

In 2004, the Australian Office of Financial Management (AOFM)¹⁰⁶ introduced its 'Securities Lending Facility', which allows market participants to borrow specific securities at penalty rates to cover their short positions. This helped underpin bond market liquidity by preventing squeezes in particular government bond lines. Since 2008, the Government budget has been in deficit, leading to an expansion in issuance of government securities. Together with a substantial increase in issuance by State Governments, this has provided further support to GC repo activity.

During the height of the global financial crisis, the RBA expanded collateral eligible for its market operations to include securities issued by private entities (known as private securities or PS), often for terms out to 12 months, in order to provide liquidity to the market. While this led to a substantial

¹⁰⁶ The Australian Office of Financial Management is a specialist Australian Government agency responsible for management of Australian Government debt.

increase in PS repos outstanding, the turnover of PS repos did not rise as much due to the long-term nature of these transactions. By mid to late 2009, with a significant amount of PS repos having matured, GC repos again accounted for the majority of repos outstanding.

Market Structure

There is a range of participants in the Australian repo market, with the RBA and price makers in Australian dollar-denominated government debt securities being the most active. Because the RBA supplies liquidity through repo transactions on most days in its domestic market operations, it is a major cash provider in the repo market. A market survey conducted by the RBA shows that the RBA has been providing around 20 per cent of total funding to the market.

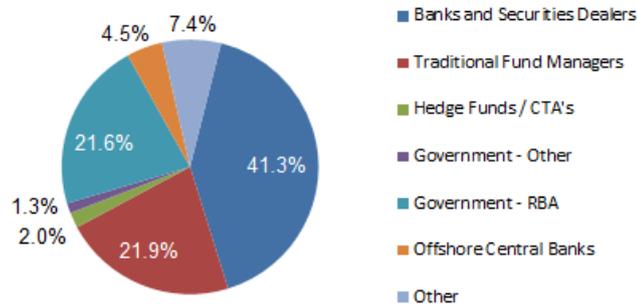
Uses and Sources of Funds			
\$ billion			
	February 2014	August 2013	August 2012
<i>Positions funded in repo</i>			
Survey respondents			
- Bond desks' net long positions	29.5	27.8	19.3
- Respondents' other positions	0.5	1.1	0.3
Other banks	0.0	0.0	0.8
Non-surveyed non-bank positions	21.6	17.7	29.5
Total uses of funding*	51.6	46.6	49.8
<i>Sources of repo funding</i>			
RBA	24.1	19.9	18.1
Survey respondents	31.0	26.0	26.6
Non-surveyed banks	1.4	0.7	0.0
Total sources of funding*	56.4	46.6	44.7

*The difference between the total uses and sources of funding reflects the discrepancy between what survey respondents reported borrowing from and lending to each other.

Unlike securities dealers in other developed markets, who often obtain repo funding from money market funds, institutions that are price-makers in Australian dollar-denominated government securities are net suppliers of cash to the repo market. Price makers also use the repo market to cover their short positions.

While not contributing to repo funding, domestic nominee companies and investment funds are active users of the repo market, attracting around one third of total funding. They approach price makers to contract GC repos either to fund their bond holdings, or reinvest funds in high yielding short-term instruments.

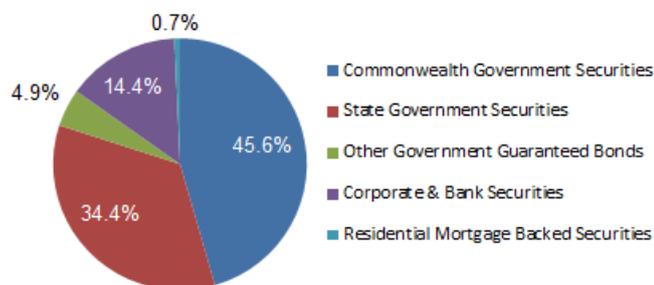
Repo Turnover by Counterparty 2012/13



Collateral

Securities used in the repo market are broadly divided into two common classes of repo collateral as defined by the RBA: general collateral (GC) and private securities (PS). General collateral includes government-related securities, those securities issued by the Australian or State and Territory Governments (CGS and semis), supranational entities and other securities carrying government guarantees. Private securities include the short and long-term debt securities of Australian depository institutions and certain highly rated securitisations.

Repo Turnover by Instrument 2012/13

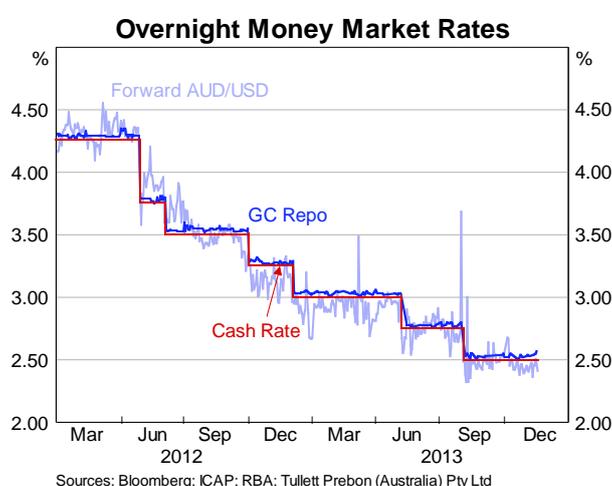


Within GC, there are two sub-classes. CGS and semi-government benchmark bonds and notes are classified as GC1, because they are the most liquid compared to other GC, which are classified as GC2. Under Basel III liquidity requirements, CGS and semis are the only securities that qualify for 'high quality liquid assets' (HQLA) status in Australia. Repo trading is currently dominated by GC1 transactions. In 2012, around 80 per cent of repos outstanding involved government securities.

PS are made up of securities either backed by assets such as residential mortgage-backed securities (RMBS) or instruments like corporate and bank bonds. The average amount of repo outstanding against PS over 2012 was around \$5 billion. In particular, repo trading in RMBS and asset-backed commercial paper (ABCP) is minimal, with the RBA being the counterparty for close to 90 per cent of transactions in 2012.

Pricing

Since mid-2009, there has been an increase in GC repo rates to levels above those of unsecured rates (for most of the previous decade, overnight GC repo rates were generally below the rate on overnight unsecured borrowing). While we would typically expect secured interest rates to be lower than unsecured interest rates, the increase in the amount of inventory needing to be funded (due to both an increase in securities on issue and the number of bond trading desks in the Australian market), has put upward pressure on the rates paid for secured borrowing. Bond desks often face high internal borrowing costs, creating an incentive for them to fund their inventory through external (repo) borrowing. Apart from the RBA, the main source of repo funding is bank treasuries. However, as repo market activity finishes earlier in the day than the time at which bank treasuries look to square up their cash positions, bond desks generally must pay a premium to source funding from external bank treasuries.



Market Infrastructure

Transactions mainly take place in the over-the-counter (OTC) market, with only a small portion of trades conducted on the electronic platforms offered by interdealer brokers. Price discovery is facilitated by the electronic platforms, with previous trade information available, however final negotiation and agreement on price and terms generally occurs bilaterally, via telephone.

Security legs of repo transactions are predominantly settled in Austraclear, a central securities depository (CSD) owned by the Australian Securities Exchange (ASX), that offers irrevocable real-time Delivery versus Payment (DvP) settlement. Cash legs are settled through the Reserve Bank Information and Transfer System (RITS), which is Australia's high-value payments system used by financial institutions to settle payment obligations on a real-time gross settlement (RTGS) basis. However, some transactions can also settle in international CSDs (such as Euroclear) or on the books of custodians.

Currently within the Australian market there is only limited tri-party collateral management activity in debt securities. The Australian Securities Exchange (ASX) has recently introduced a tri-party service (ASX Collateral) in collaboration with Clearstream.

Legal and Tax Arrangements

In Australia, all repo transactions are governed by the standard Global Master Repurchase Agreements (GMRAs). In order to conduct repo with the RBA, participants must accept the Reserve Bank Information and Transfer System (RITS) regulations, which serve as an annex to the GMRA.

The Australian Taxation Office (ATO) recognises the substance of a repo transaction as a loan and so taxes repo interest as income and not as a capital gain. While this applies to Australian repo market participants, the RBA itself is exempt from paying tax. Non-residents who earn interest on Australian repos are subject to withholding tax.

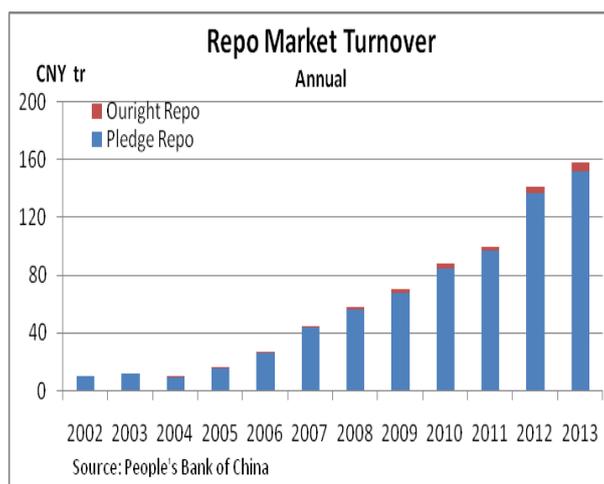
Identification of Market Development Impediments and Opportunities

The RBA is currently in discussions with external vendors on the possibility of moving OMOs onto an electronic platform, from OTC trades via telephone, to increase the speed and efficiency of the auction process. With OMOs being executed on an electronic platform, counterparties will be able to enter approaches directly and will all simultaneously receive notification as to whether their approaches have been successful or unsuccessful.

As noted above, the ASX has just introduced a tri-party repo collateral management service in Australia. This service is fully operational but there has been no activity on the platform other than for testing purposes. Some market participants attribute this lack of activity to the pricing structure offered by the ASX.

China

The Chinese inter-bank bond market was established in 1997 and repo transactions were introduced at that time. China's inter-bank bond market has developed rapidly since 2002, with a significant increase in size, more products and a broader universe of investors. Repo transactions have become an important tool of liquidity management for inter-bank bond market investors as well as the PBOC. Turnover in repos increased from RMB10 trillion in 2002 to RMB142 trillion in 2012.

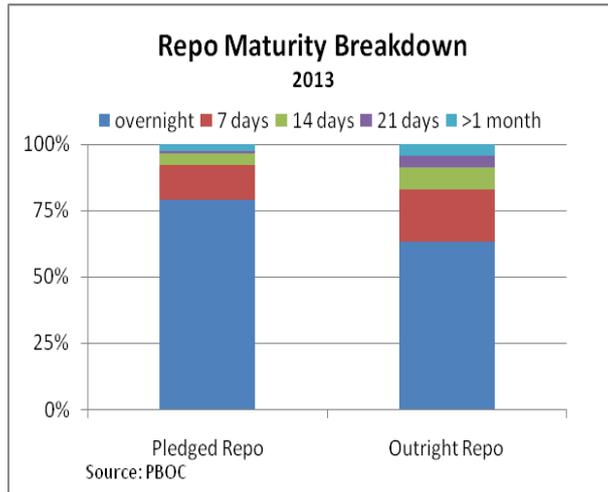


Market Structure

Repo transactions are conducted under two different structures. The most common form is the pledged repo in which the collateral remains in the name of the borrower and is pledged to the lender. In 2013, more than 95 per cent of repo transactions in the inter-bank market were pledged repos. The other structure is known as outright repo, in which ownership of collateral is transferred from borrower to lender. This structure was introduced to the interbank market in 2004.

Major repo market participants include state-owned commercial banks, joint stock commercial banks, urban commercial banks and policy banks. Other participants include insurance companies, security firms, and non-legal entities, such as securities investment funds and pension funds. There are more than 5200 participants in the pledged repo market, while the number of participants in the outright repo market is about 1400. Currently commercial banks are the main participants with a share of transaction volume of around 67 per cent in 2013.

The terms of the repo transactions in the inter-bank market range from overnight to 1 year, with overnight and 7 days the most commonly traded. In 2013, 92 per cent of all pledged repo transactions were under 7 days.

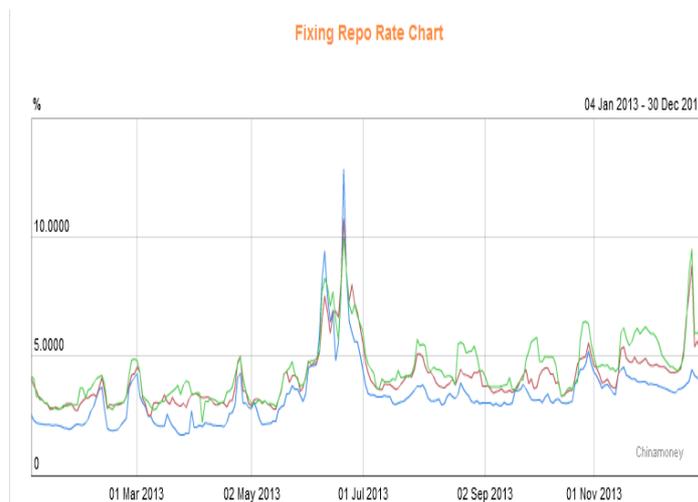


Collateral

All bonds that are traded in the inter-bank market can be used for repo transactions, including government bonds, central bank bills, financial bonds and corporate bonds. About 85% of the pledged bonds are government bonds and financial bonds issued by policy banks. Participants are not able to substitute collateral during the term of the repo.

Pricing

The interbank fixing repo rate is a benchmark rate based on the rate at which repo traded in the interbank market between 9:00am and 11:00am every trading day. The fixing repo rate is released to the public at 11:00 a.m. each trading day.



Market Infrastructure

The People's Bank of China is the regulator of the inter-bank bond market and is responsible for the regulations under which this market and the repo market segment operate. The National Association of Financial Market Institutional Investors (NAFMII) is the market self-regulatory organization.

Bi-lateral repo transactions are executed via a trading platform provided by the National Inter-bank Funding Centre. The market has timely access to information on repo trades.

The Shanghai Clearing House and China Central Depository & Clearing provide custody and settlement services for repo transactions. Transactions are currently cleared on a bilateral basis and settled on gross, DvP basis. The clearing of cash is done by China National Advanced Payment System (CNAPS).

Legal and Tax Arrangements

Under supervisory arrangements, all repo participants must sign a master repo agreement before undertaking transactions. The PBOC issued the "National Inter-bank Bond Market Master Repurchase Agreement" on 29th July 2000 and "National Inter-bank Bond Market Master Outright Repo Agreement" on 18th May 2004. In 2013, NAFMII integrated these two agreements into the "NAFMII Bond Repurchase Master Repo Agreement (2013)" under the guidance of the PBOC. This version of the legal documentation introduced mechanisms such as the substitution of collateral, valuation of collateral, the transfer of margin and the rapid processing of collateral.

The repo interest of pledged repo is taxed as interest income, treating the repo as a loan. Repo interest from outright repos is taxed according to the purpose of the trade.

Identification of Market Development Impediments and Opportunities

Foreign participants are just starting to enter into China's repo market, with the Bank of China (Hong Kong), an RMB clearing bank the only foreign participant. The PBOC is in discussions with other offshore RMB clearing banks about access to the repo market.

The PBOC will actively research and encourage development in the repo market, with consideration for the capacity of the money market.

The recent introduction of the "NAFMII Bond Repurchase Master Repo Agreement (2013)" will provide opportunities for repo market development. The PBOC is investigating the merits of introducing a tri-party repo solution in China.

Hong Kong

The repo market in Hong Kong is relatively small when compared to lending conducted through the unsecured interbank and foreign exchange swap markets despite having the necessary infrastructure for, and no legal or tax impediments to, conducting repo. This is largely because the relevant institutions are more used to obtaining Hong Kong dollar (HKD) funding through the two abovementioned channels. Non-bank financial institutions do not generally conduct repo in Hong Kong.

There are generally no restrictions on participation in the Hong Kong repo market. Nevertheless, participation has been largely confined to financial institutions (particularly the banks) and money brokers and dealers. This notwithstanding, financial institutions are more used to obtaining funding via the unsecured interbank market or via foreign exchange swaps for two reasons. First, there has not been a large stock of government securities¹⁰⁷ or central bank paper for banks to conduct repo in HKD. Secondly, since the HKD is pegged to the USD, which has much deeper and liquid markets, banks can obtain HKD funding through the USD and foreign exchange swap markets with relative ease.

Repo transactions between financial institutions are sometimes conducted via interdealer brokers for reasons of convenience and anonymity, although banks also rely on other bilateral and tripartite repo services from time to time (see discussion below). It is worth noting that the abundant HKD liquidity in the system in recent years has reduced banks' funding needs in general, be it in the form of unsecured lending or repos.

Market Structure

Banks usually conduct repo for funding and cash management instead of borrowing specific securities. For instance, some of the local branches of overseas banks (which have relatively small and restricted retail deposit bases) may use their Exchange Fund Bills and Notes (EFBN) and government bond holdings to obtain liquidity from local banks (which have a larger retail deposit base).

Participation of non-bank financial institutions, such as insurance companies and investment funds, in the repo market has been limited. Many institutional investors in Hong Kong, particularly HKD-denominated funds, do not engage in repo products to invest cash. Indeed, their investment mandates have reportedly become more restrictive following the financial crisis and even fewer of them are engaging in repo products to invest cash.

Collateral

Most of the repo transactions among financial institutions are conducted using either government bonds or EFBN. For the purposes of funding, use of other securities (e.g. corporate bonds, asset-

¹⁰⁷ The HKSAR Government has a strong fiscal position and does not need to finance its general expenditures by issuing government bonds. Thus, the HKSAR Government has only issued a limited quantity of government securities. In 2009, the HKSAR Government established the Government Bond Programme ("GBP") to promote further and sustainable development of the local bond market. Proceeds from the issuances are managed separately from the General Revenue. As at end-March 2014, a total of HK\$115 billion principal amount of HKD bonds has been issued under the GBP. The outstanding size was HK\$94 billion.

backed securities, or equities) are not as common, as these securities are either less liquid or subject to more volatile price movements.

The Hong Kong repo market infrastructure allows substitution of collateral during the term of the repo but it is not standard practice among participants.

Pricing

There is no comprehensive data series on HKD repo pricing, although the difference between HIBOR and HKD repo rates is reportedly immaterial at the current ultra-low interest rate environment due to the short term nature of repos. The following chart shows the borrowing rates for a 3-month tenor (one of the most common tenors) in the unsecured money market (unsecured rate) and foreign exchange swap market (implied swap rate).



Market Infrastructure

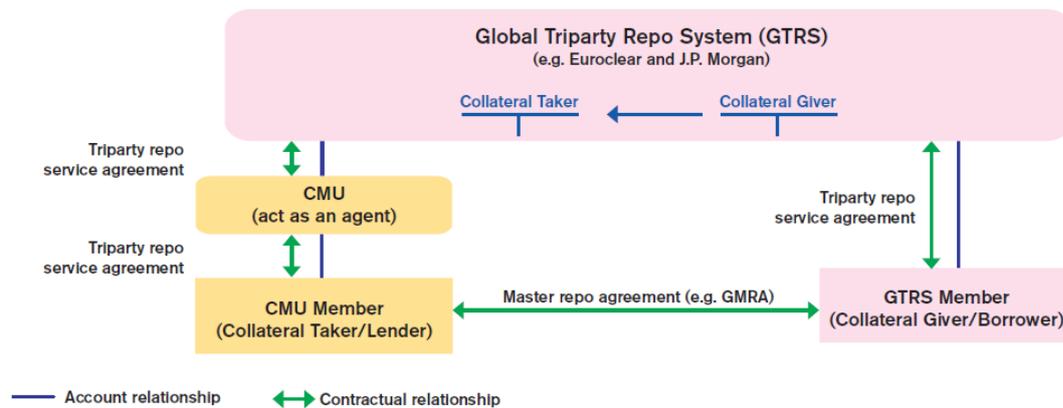
Price discovery is mainly achieved through interdealer brokers, although banks with established relationships may conduct repo directly through bi-lateral dealing. Transactions are primarily executed through established voice trading channels.

Financial institutions in Hong Kong conduct repo transactions with both local and international market players. For the local market, clearing and settlement of repo transactions can be conducted through, amongst other channels, the bank repo platform administered by the Central Moneymarkets Unit (CMU) as DvP transactions.¹⁰⁸

CMU also provides cross-border collateral management service with the global tripartite platforms, Euroclear, J.P. Morgan and Clearstream. To further enhance the cross-border collateral management service, DvP links between Hong Kong's Real Time Gross Settlement (RTGS) systems and the tripartite repo systems have been established to enable liquidity movements to be done in Hong Kong's RTGS systems while the collateral movements are done concurrently through the repo platform.

¹⁰⁸ The CMU is a debt securities custodian, clearing and settlement system operated by the Monetary Authority.

Components of the cross-border collateral management service



Legal and Tax Arrangements

The GMRA is the standard legal documentation used in the local repo market. Banks in Hong Kong are reportedly more used to executing GMRA bilaterally under their own entity names due to established practice. In other words, instead of using a Hong Kong annex, they typically execute a standalone GMRA for conducting HKD repo trades.

There is no capital gains tax or withholding tax in Hong Kong. Under the tax laws of Hong Kong, stock borrowing and lending transactions (including repo transactions) where specific criteria are satisfied, require no stamp duty to be payable. This means the tax treatment is that of a loan rather than an outright purchase and sale of securities.¹⁰⁹ Similarly, transactions that fulfil certain criteria are eligible for profit tax relief. The conditions for stamp duty exemption and profit tax relief are set out in the relevant ordinances¹¹⁰, as well as in the interpretation and practice notices published by the Inland Revenue Department of Hong Kong¹¹¹. It is also worth noting that most funding-driven repo transactions are conducted using EFBNs and government bonds, which do not attract any taxation even for outright purchases and sales.

There are no restrictions on the entrance of foreign investors into the Hong Kong market.

Market Development Impediments and Opportunities

The relatively small size of the repo market in Hong Kong is partly due to the established practice of banks funding in the unsecured interbank and foreign exchange swap markets rather than repo. Since the financial crisis, there are signs that banks are less willing to engage in unsecured lending. However, given the abundant liquidity in the local banking sector at present, the need for funding activities is rather limited, suggesting that banks may not have strong motivation to increase their use of repo.

¹⁰⁹ The specific requirements are set out in http://www.ird.gov.hk/eng/pdf/e_dipn27.pdf (paragraphs 14 to 19 are the most relevant).

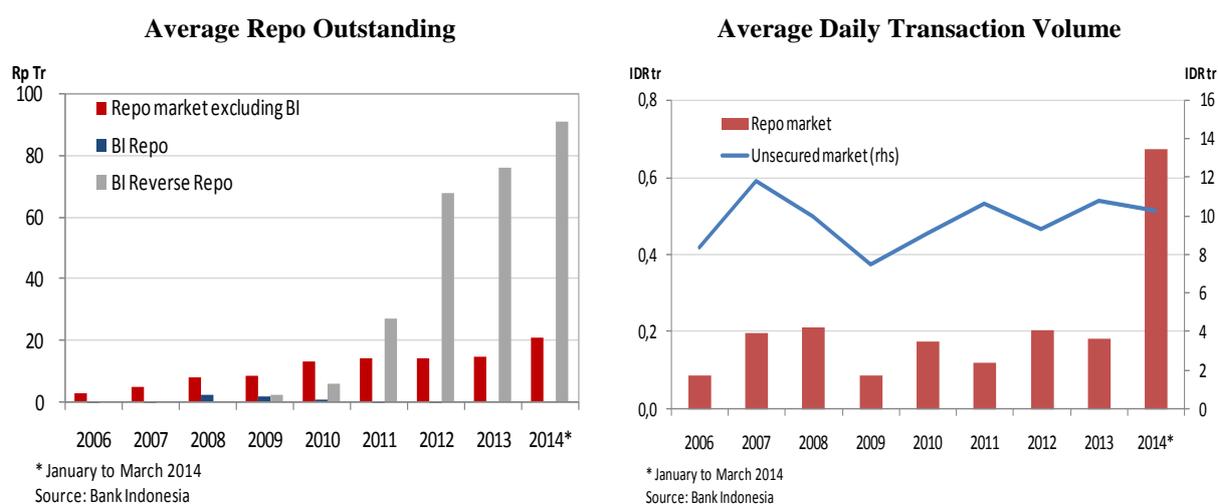
¹¹⁰ For profit tax, section 15E of the Inland Revenue Ordinance (Cap. 112 of Hong Kong Law). For stamp duty, section 19 of the Stamp Duty Ordinance (Cap. 117 of Hong Kong Law).

¹¹¹ <http://www.ird.gov.hk/eng/ppr/dip.htm>

Notwithstanding the above, the HKMA is aware that recent developments in international financial regulations may result in a reallocation of assets for use as collateral. An efficient repo market would be conducive to such reallocations. To support the further development of the repo market in Hong Kong, the HKMA will continue to refine and provide the necessary financial infrastructure to facilitate the conduct of repo both locally as well as on a cross-border basis. The HKMA will also closely monitor the developments in international financial regulations and their implications for the development of the repo market in Hong Kong.

Indonesia

Indonesia's repo market is relatively undeveloped and market participants are more likely to use the more liquid unsecured interbank money market (PUAB). Few participants or financial institutions have sufficient knowledge to undertake repo transactions. There has also been a stigma associated with repo as financial institutions entering the repo market are assumed to have exhausted their credit limits in the unsecured market and so have liquidity problems. However, there has been an increase in repo turnover since the introduction in December 2013 of a Master Repurchase Agreement (Mini MRA) as the standard contract for interbank repo. The use of this standard contract has simplified the transaction process.



During 2013, the average daily volume of repo transaction among market participants (banks, securities companies, insurance companies and mutual funds) was IDR181 billion. In the first quarter of 2014, it increased sharply to IDR671 billion. During 2013, the average outstanding of repo market was IDR14 trillion, while the average outstanding between Bank Indonesia and banks was IDR76 trillion (liquidity absorption through BI's open market operation). Repo turnover (backed by government securities-SBN) to outstanding SBN was in the range of 0.01 to 0.04 percent between 2006 and 2013.

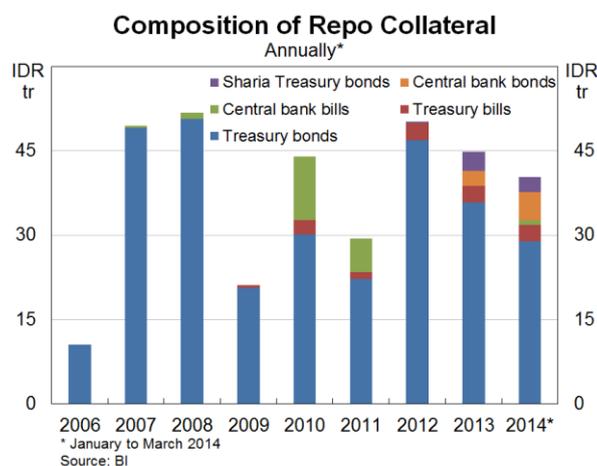
Market Structure

In the thin conditions currently evident in the interbank repo market, banks dominate the market and mainly use repo for cash and inventory management. In the past, securities companies frequently transacted in repo, although trade sizes were small, but since 2011 their level of participation has fallen. This may be due to securities companies issuing bonds rather than funding through the repo market. Furthermore, securities companies may use corporate bonds rather than government bonds as collateral; data on collateral other than sovereign debt is not available.

Collateral

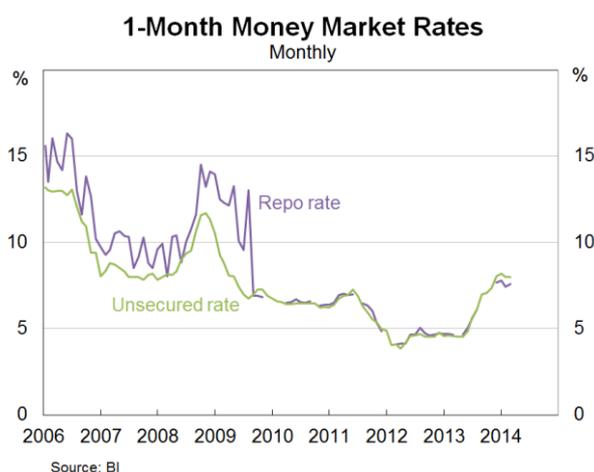
Government bonds (SBN) and Central Bank Certificates (SBI) are the most commonly used collateral in repo transactions. Corporate bonds are also used, but volumes are low as they pose higher risks and there are difficulties in calculating mark-to-market values due to the illiquidity of the corporate

bond market. Bank Indonesia accepts government bonds as eligible collateral. The ability to substitute collateral during the term of the repo is dependent on the bilateral repo agreement between market participants. Based on a repo survey conducted by Bank Indonesia in 2010, some market participants are able to substitute collateral, while others are not.



Pricing

One characteristic of the Indonesian repo market is that the repo rate is usually higher than the unsecured lending rate. This is largely due to the complexity of repo agreements and the illiquidity of the repo market, as well as the stigma associated with the market. In the early 2000s, the spread between the repo rate and the unsecured rate was around 200 basis points. As the supply of liquidity fell during the global financial crisis, the spread widened to as much as 600 basis points and the stigma surrounding the market increased.



In an effort to support the development of the repo market and increase liquidity in the government bond (Surat Berharga Negara or SBN) market, Bank Indonesia began using reverse repo transactions in their open market operations in February 2009. Reverse repos complemented Bank Indonesia's use of repo. Since 2009, alongside the return to normal liquidity conditions, the spread between repo and unsecured interbank money market rates has narrowed. Recently, following the introduction of the Mini MRA and increased volumes in the interbank repo market, repo rates have started to fall below unsecured money market rates.

Market Infrastructure

Market participants are able to gain access to pricing and other trade related information through their relationships with brokers. Repo transactions are generally executed via telephone or through other systems.

Following execution, all repo transactions using SBN and SBI as their collateral are recorded in the Bank Indonesia Scripless Securities Settlement System (BI-SSSS). BI-SSSS provides settlement, transaction and securities administration to banks. The electronic system is connected directly to participants, organizers and the Bank Indonesia - Real Time Gross Settlement (BI-RTGS) system. In addition, BI conducts its open market operations through BI-SSSS, from the initial offer, to bidding and settlement of the trades.

Repo transactions using corporate bonds or equities as the underlying securities are settled through the Central Depository and Book Entry Settlement System (C-BEST), managed by Kustodian Sentral Efek Indonesia (KSEI) or the Indonesian Central Securities Depository. It is an integrated electronic platform that supports settlement processes in Indonesian capital markets.

Legal and Tax Arrangements

In June 2005, the Inter-Dealer Market Association for Government Securities (Himdasun) established a Local Master Repurchase Agreement (MRA) for repo transactions in Indonesia, to support the development of the repo market. From a legal point of view, the local MRA adopted all important articles from the TBMA/ISMA GMRA but still needed to accommodate local conditions in Indonesia to be applicable for transactions.

In 2010, Bank Indonesia, the Capital Market and Financial Institution Supervisory Board (Bapepam-LK) and the Ministry of Finance formed a working group with some market participants to develop a GMRA Indonesian Annex to replace the local MRA. The GMRA Indonesian Annex is still in the draft stage.

In December 2013, Bank Indonesia facilitated the drafting of a Mini MRA between eight banks to encourage the use of standard contracts of repo transactions. There are now 62 banks using the Mini MRA. This initiative has resulted in a sharp increase in transaction volume in the interbank repo market.

For tax purposes, repo transactions with local currency government securities and central bank bills as collateral, which are settled through the BI-SSSS, are treated as a loan and repo income is taxed as interest income. There is no withholding tax for repos facilitated by BI-SSSS, as taxes will accumulate on earnings at the end of period.

Repos with collateral other than government or central bank securities, facilitated at the Indonesia Stock Exchange, are treated as a purchase and sale of securities and are subject to capital gains tax. These repos are also subject to a withholding tax of 0.10 per cent of the gross value of the transaction according to Government Regulation No. 41/1994.

Identification of Market Development Impediments and Opportunities

A 2010 survey conducted by Bank Indonesia identified several reasons why the repo market in Indonesia had not developed. Excess system liquidity meant that demand for funding from the market was very low. Participants looking to fund from the market found unsecured transactions in the interbank money market simpler to contract than repos, especially for short-tenors. Finally, participants responded that there was a stigma associated with entering the repo market as other participants assume that it is a sign that unsecured credit limits have been exhausted.

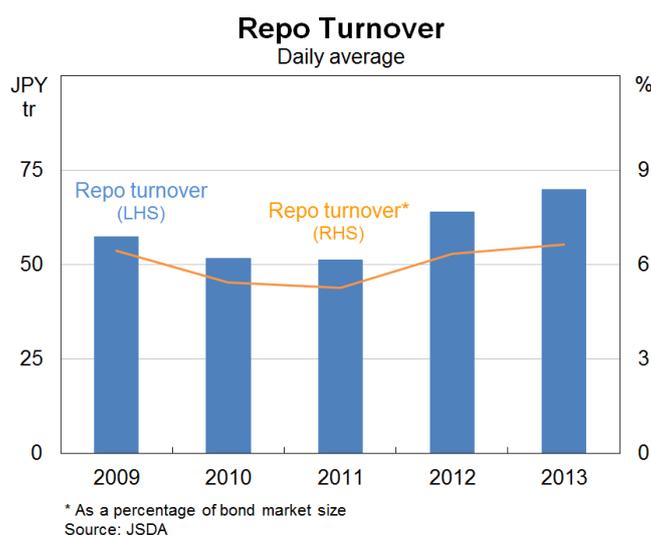
The initiative by BI to develop new legal documentation in collaboration with a pilot group of key banks and to socialise the use of this agreement has yielded positive results. The number of banks using the agreement has increased and activity in the repo market has risen appreciably. It would appear that the way in which BI have approached implementation has reduced the old perceptions of recourse to repo as a sign of credit or liquidity problems.

Differences between the accounting and legal treatments of repo transaction, especially in cases of bankruptcy also pose a barrier. Under the accounting definition, a repo appears as a *secured loan* and the collateral remains on the seller's balance sheet. In contrast, a repo is legally treated as a sale of an asset with an agreement at the time of sale to repurchase the same or identical asset at a specified date in the future. So there is a legal transfer of ownership of the asset (*principle of sale and buy back repo*). There is some concern that in an event of bankruptcy, there would be a dispute about the legal title of the repo asset and whether it belongs to the repo seller or repo buyer, depending on the prevailing law.

Japan

In Japan, there are two types of repo transactions, *gensaki* repo (securities repurchase transactions) and *gentan* repo (cash-collateralized securities lending transactions)¹¹². *Gensaki* repo is divided into *kyu-gensaki* repo and *shin-gensaki* repo. *Shin-gensaki* repo allows for general means of risk management, such as haircuts, margin calls, repricing and substitutions.

The Japanese repo market started with the introduction of *kyu-gensaki* repo in 1949 as an instrument of short-term funding using securities as collateral. *Gentan* repo and *shin-gensaki* repo were introduced in 1996 and 2001 respectively.



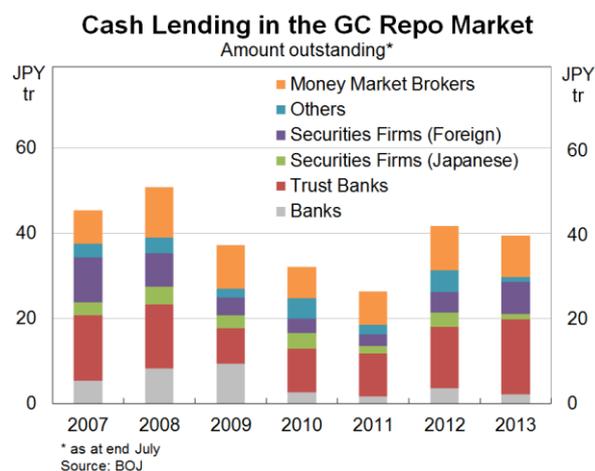
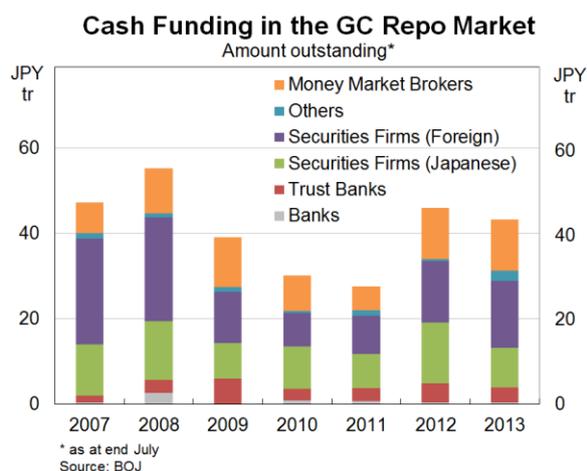
Market Structure

Securities firms, money market brokers and trust banks are major participants in the Japanese repo market. Securities firms are the main cash borrowers, while trust banks are the main cash lenders.

In the general collateral (GC) repo¹¹³, securities firms and trust banks increased their presence after the significant decrease in overall trading volume during the global financial crisis. Market participants point out that the fundraising methods of securities firms shifted from the Bank of Japan's money market operations to GC repo and this shift led the increase of the amount outstanding of GC repo. Reflecting this increase in GC repo transactions by securities firms, trust banks also increased the size of GC repo transaction as a counter party of securities firms.

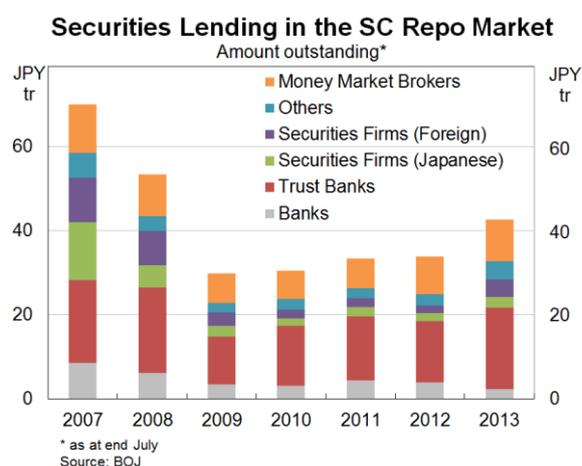
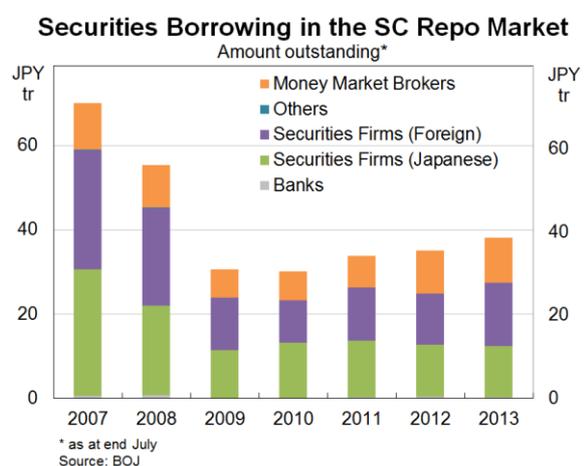
¹¹² Repo transactions backed by equity and commercial paper are not included (market size is about JPY 6 trillion and 3 trillion respectively)

¹¹³ Repo transactions in which the securities to be used as collateral are not specified.



In the special collateral (SC) repo¹¹⁴ market, domestic and foreign securities firms are the main borrowers of specific issues of Japanese government securities (JGS) to cover short positions incurred in conducting JGS outright transactions with their customers. Trust banks are the largest providers of JGS.

In 2013, SC repo transactions increased from the previous year owing to increased transactions by foreign securities firms and trust banks. The increase in transactions by foreign securities firms partly reflected increased demand for JGS from non-residents. The customer base of foreign securities firms is composed predominantly of non-residents.



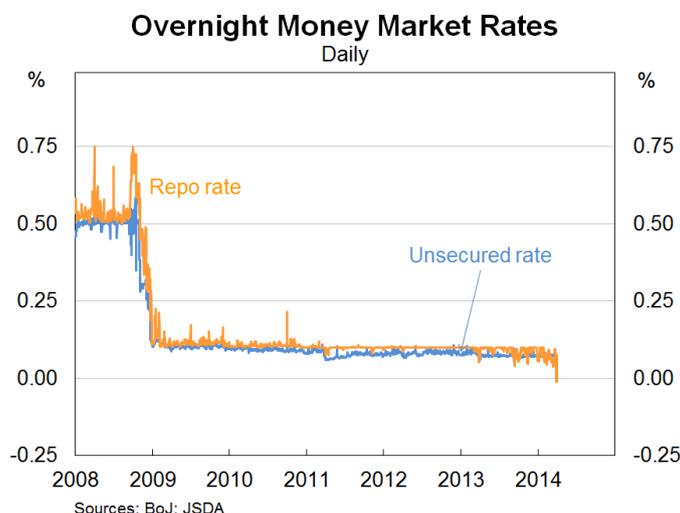
Collateral

Most repo transactions are backed by JGS. JGS such as fixed-rate bearing government bonds, Japanese treasury bills, inflation-indexed government bonds, and floating-rate government bonds are generally used; while securities other than JGS are rarely used. Market participants are able to substitute collateral during the term only in *shin-gensaki* repo.

¹¹⁴ Repo transactions in which the securities to be used as collateral are specified.

Pricing

The unsecured overnight call rate often moves below the GC repo rate. This is because of differences in the settlement cycle and market structure; e.g. market participants or the purpose of transactions.



In a standard *gentan* repo, the price of the collateral securities is generally determined based on the Reference Statistical Price for OTC Bond Transactions issued daily by the Japan Securities Dealers Association (JSDA). In a *gensaki* repo, the price of the collateral securities is calculated based on the same JSDA release in most cases although there is no clear standard.

Market Infrastructure

Securities firms and money market brokers act as financial intermediaries in the Japanese repo market. They transact with their customers via telephone or email. In addition, Japan Bond Trading Co., a brokers' broker has offered an electronic trading service since 2007 which includes electronic trade matching.

Market participants are able to access information on repo transactions from a variety of sources. The JSDA publishes the GC repo rates every business day. The JSDA also publishes data on amounts outstanding for both *gensaki* repo and *gentan* repo, as well as data on turnover. In addition, major brokers report intraday repo data to several information vendors every business day.

Currently, repo transactions backed by JGS are basically settled on DvP basis. Approximately half of them are settled via CCP, and the rest is bilaterally settled. Major participants in the Japanese repo market such as securities firms, money market brokers and trust banks are clearing participants for OTC JGS transactions in CCP (Japan Securities Clearing Corporation, JSCC). In addition, a major bank began offering tri-party repo services in 2011.

The global financial crisis also prompted participants to shorten the JGS settlement cycle by one day; for SC repo, from T+3 to T+2; for GC repo, from T+2 to T+1. Discussions for further shortening of the cycle by one day are ongoing.

Legal and Tax Arrangements

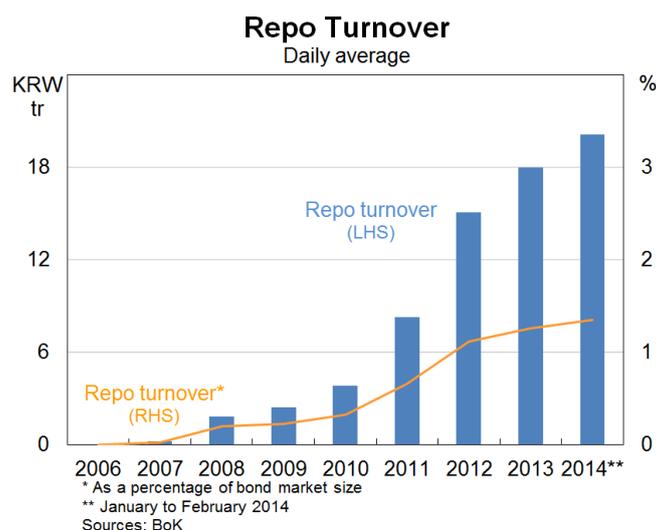
From a legal perspective, *gentan* repo is treated as lending of securities while both *kyu-gensaki* repo and *shin-gensaki* repo are considered as sales of securities. Only *shin-gensaki* repo allows for repricing and substitutions.

The contract typically consists of three components, 1) Master Agreement, 2) Memorandum or Letter of Consent, and 3) Individual Transaction Agreement. The Master Agreement for *gentan* repo is based on the Master Repurchase Agreement of Public Securities Association (PSA, currently The Bond Market Association) and that for *shin-gensaki* repo is based on the Global Master Repurchase Agreement (GMRA) of International Securities Market Association (ISMA, currently International Capital Market Association).

Income from *gensaki* repo and *gentan* repo is taxed as interest and is not subject to withholding tax.

Korea

Korea's repo market can be classified into two subcategories; the 'institutional repo market' and the 'customer repo market.' Repos in the institutional market are transacted between financial institutions, while in the 'customer market' participants borrow cash via repo from individuals, corporations and trust investors. The institutional repo market and the customer repo market are distinct from one another and are different in terms of the securities traded, the market participants and the way collateral securities are managed and settled.



The customer repo market has dominated the Korean repo market for the last two decades. Following the Global Financial Crisis in 2008, the institutional market began to grow due to the large injection of liquidity by the Bank of Korea designed to relieve credit constraints. At the same time, growth in the customer repo market stalled due to regulations restricting banks' loan-to-deposit ratios. As customer repos were excluded from the definition of a deposit, banks became less willing to enter the customer repo market.

The institutional repo market continued to expand following new regulations in 2010 (and further reinforcement of the regulations in 2011), limiting the amount of call money that could be borrowed by securities companies. As securities companies' demand for short-term funds moved from call money to the repo market, the size of the market increased five-fold between 2008 and 2012. Securities trusts also increased their use of repo as they sought to profit from arbitrage trades.

Market Structure

In addition to securities companies and trusts, institutional market participants include banks, asset management companies, insurance companies and the eight public financial companies. Securities companies and securities trusts are the primary borrowers of funds in Korea's repo market (representing 78 per cent of the market) and have been turning in greater numbers to repo transactions as a way to diversify their sources of funds following the 2010 regulations on call money funding.

The cash lending side of the institutional repo market has a more diversified participant base. Asset management companies and securities trusts account for around 58 per cent of the market, with

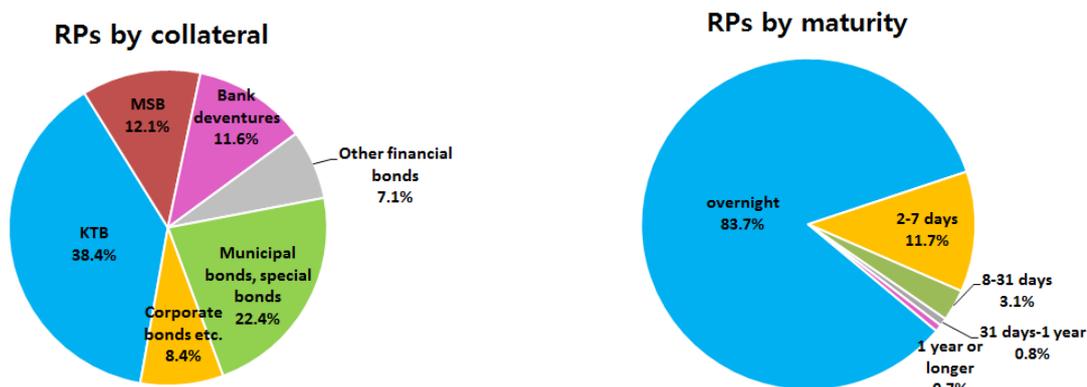
bank trusts, merchant banks, securities companies and insurance companies making up an additional 26 per cent. Korea Securities Finance Corp. increasingly serves the role of intermediary for repo transactions in the institutional market, where it is not only a simple broker of the deals but also a dealer itself. In the future, Korea Securities Finance Corp. is expected to introduce an open bidding method and take on more of a market-making role.

In terms of maturity, 66 per cent of repo contracts are overnight and only a small fraction are those with maturity of eight days or longer.

In the customer repo market, securities companies and banks generally borrow cash (provide collateral) from individuals, bank trusts and corporations. Banks have reduced their use of the customer repo market since 2008, following new regulations on banks' loan to deposit ratios. Individuals invest in repos mostly through cash management accounts (CMAs) with repo features. These products allow an account holder to withdraw from and deposit cash into their account without any restrictions, while receiving a fixed market interest rate. In such cases, the transactions are mostly 'open repo' in that there is no set maturity. Corporations mainly deal in repos to manage their short-term funds. Bank trusts have dramatically increased their use of the customer market since 2008, following their exclusion from the list of regulated organizations in the market.

The Bank of Korea also uses repo in its open market operations as a short term instrument (less than 91 days) to adjust market liquidity. Due to structural excess liquidity, the BoK generally enters into reverse repo transactions to absorb liquidity from the system.

Repos outstanding, by collateral and maturity
(at end February 2014)



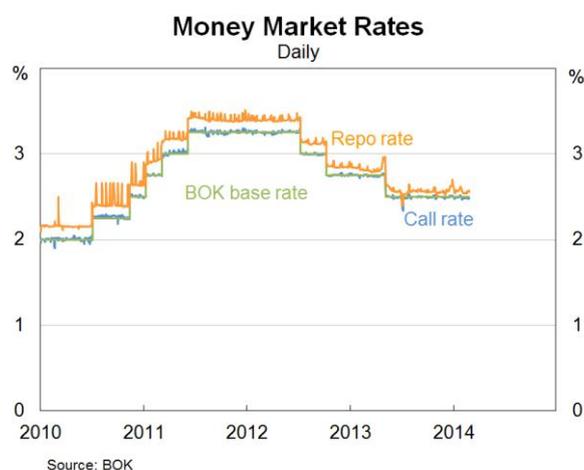
Collateral

Collateral securities used in the institutional market are mostly Korean Treasury Bonds (KTB) and Monetary Stabilization Bonds (MSB). In the customer repo market, eligible collateral is limited to investment grade bonds. That is, any bond that is marketable and can be valued on a daily basis (for mark-to-market purposes), which has a credit rating of BBB or higher and that is issued or guaranteed by designated financial institutions or guaranteed by the central or local government.

Securities eligible for repo with the BoK include KTBs, MSBs and government-guaranteed bonds. During the financial crisis, the BoK expanded these eligible instruments to include bank and corporate bonds and some bonds and mortgage-backed securities issued by government corporations.¹¹⁵

Pricing

Like many other countries in the region, the repo rate in Korea is higher than the unsecured rate. In Korea, this may be due to a number of reasons including that call transactions are less operationally intensive than repo as no collateral management is required. Repo transactions also face higher fees in Korea for collateral settlement and brokerage. In addition, repos are mainly used by securities companies, whose credit ratings are lower than those of banks (the primary users of the call market). Transaction costs have fallen in recent times leading to a drop in repo rates and the spread between call money and repo rates.



Market Infrastructure

Most repo transactions in Korea are executed through brokerage companies. Market participants are able to gain information on repo rates, as well as the supply and demand situation from these brokers. After transactions are completed, the brokerage companies send data to the Korea Financial Investment Association (KOFIA). Market participants are able to access this transaction information.

In the institutional market, repos are then settled through the tri-party repo agent, the Korea Securities Depository (KSD). The KSD is an independent third-party that provides settlement and collateral management services (including securities management, margin management and repurchasing) after the repos have been executed. Repos are settled on a Delivery versus Payment basis.

In the customer repo market, bilateral settlement between the financial institution and customer takes place. This generally takes the form of hold-in-custody settlement, where securities sold

¹¹⁵ Bonds issued by Korea Land Corporation, Korea Housing Corporation and Small & Medium Business Corporation, as well as mortgage-backed securities issued by Korea Housing Finance Corporation and corporate bonds.

through the customer repo market are held by the relevant institution and deposited with the KSD. These securities are not transferred to customers, however the market price of bonds deposited with the KSD must be at least 105 per cent of the repurchase price.

Legal and Tax Arrangements

Institutional market repo transactions are contracted subject to GMRA. There is no separate custom annex used in Korea. In the customer repo market, the financial institutions offering repo provide terms and conditions.

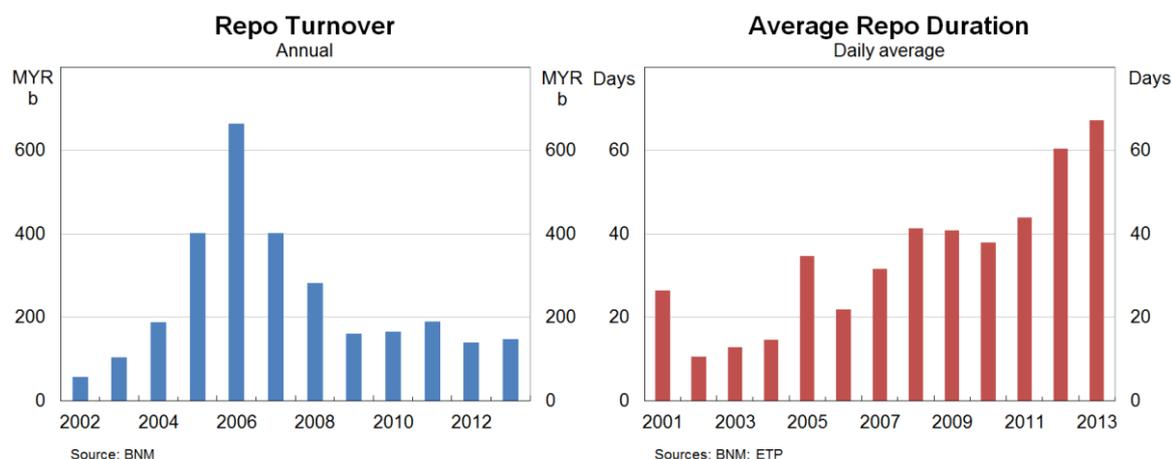
Repos in both the customer and institutional markets are considered a loan for tax purposes and the repo interest earned is taxed as interest income. Withholding tax is deducted for foreign investors.

Identification of Market Development Impediments

An increase in the trading of extremely short-term repos has led to a shorter average maturity for repo transactions, impeding repo market development. This is mainly due to the fact that securities companies have replaced overnight call money with overnight repo transactions. Term repo transactions for arbitrage conducted by asset management companies have decreased due to a reduction in the spread between long and short-term interest rates. Recent years have seen a jump in trading by securities companies and securities trusts though, focusing mostly on short-term maturities.

Malaysia

Repurchase agreements (repo) are one of the main instruments used in Malaysian financial markets, with a total volume of MYR148 billion transacted in 2013. The main participants in the repo market are Bank Negara Malaysia (BNM) and the commercial banks. BNM primarily uses repo as part of its monetary operations to manage liquidity in the banking system, as well as to provide securities to the market for securities lending and borrowing activities. The repo market has helped improve liquidity in secondary bond market by allowing financial institutions to borrow securities via repo to cover their short positions from market making activities.



Repo market activities in Malaysia started in the 1980s with hold-in-custody repo, where financial institutions primarily used Certificate of Deposits (CDs) and Bankers Acceptances (BAs) as collateral to source funding from corporate clients. Since then, the types of collateral used have expanded to include sovereign bonds and private debt securities, in line with the development of the ringgit bond market.

Repo volume increased significantly in 2005 and peaked in 2006 with a total volume of MYR665 billion transacted in the market. This followed BNM's measures to enhance liquidity in the ringgit bond market, which included: active use of repo as a monetary policy instrument; the introduction of the Institutional Securities Custodian Programme (ISCAP), to enable borrowing and lending of securities; and a securities lending facility for Principal Dealers¹¹⁶. The use of repo as a monetary policy instrument has helped BNM to manage liquidity in the banking system as well as to recirculate securities back into the market. In 2012, 15 per cent of BNM's monetary operations were conducted via repo and BNM plans to continuously increase its use of repo in its market operations.

The ISCAP program, another BNM initiative to increase liquidity in the bond market, allows institutional investors (mainly pension funds and insurance companies) and financial institutions to lend securities to BNM in exchange for a lending fee. This effectively releases captive holdings of bonds by institutional investors, which can then be recirculated into the market via repo transactions to support the Principal Dealers' market making activities. Institutional investors are the major participants of the ISCAP program, comprising more than 90 per cent of total securities lent.

¹¹⁶ Principal Dealers are selected financial institutions appointed by BNM to participate in primary issuance and make market in the secondary government bond market.

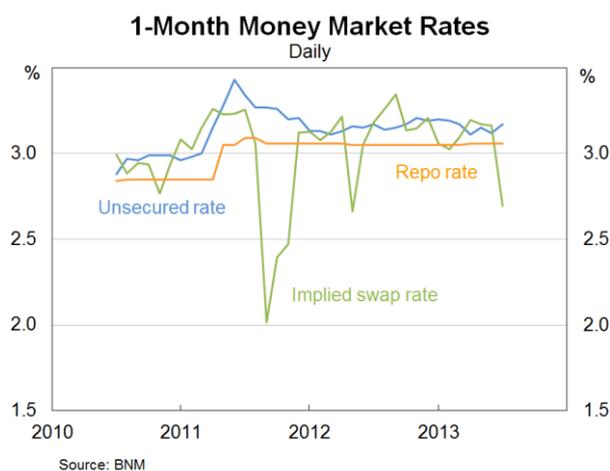
The increase in repo volume was also attributed to another BNM initiative in October 2005, where short selling activities were permitted, allowing interbank participants to further improve liquidity and the price discovery process in the secondary bond market. This encouraged market makers to enter into repo and securities borrowing and lending to cover their short positions.

In 2006, BNM further strengthened the legal framework of the repo market by introducing new regulations via the 2006 Guidance Notes on Repo. These guidance notes imposed stringent risk management, prudent collateral management practices and required the signing of legal documentation (i.e. Global Master Repurchase Agreement (GMRA)). In line with the GMRA, the Guidance Notes required physical and title transfer of the collateral for repo transactions.

The legal documentation and physical transfer were operationally challenging for some corporate clients and resulted in dwindling participation in the repo market. Nevertheless, the Guidance Notes on Repo were a positive development for the market, increasing confidence between counterparties and allowing them to transact for longer repo terms (average repo terms increased from 22 days in 2006 to 67 days in 2013). In particular, the prudent collateral management framework allowed repo participants in the interbank market to engage in repo terms of up to one year. Repo volume remained relatively stable around MYR140 billion to MYR190 billion per annum between 2009 and 2013.

Pricing

Despite repo rates being generally lower than the equivalent unsecured rates, banks' short-term (typically less than one week) liquidity requirements are generally met via the unsecured money market. This is partly due to the stable banking system environment, which results in higher credit risk tolerance of banks to lend short-term money uncollateralised.



Market Structure

The Guidance Notes on Repo require at least one principal to a repo transaction to be a licensed financial institution under the Financial Services Act. Interbank players generally tap into the repo market for cheaper funding or to borrow specific securities to cover their short positions. All interbank institutions in Malaysia have signed GMRAs with BNM and at least two other financial institutions. Interbank repo is usually transacted for longer terms, for example, three months to one

year in tenor, in comparison to repo conducted with BNM which usually ranges between two weeks and six months.

In addition to BNM's repo operations for liquidity management, BNM also expanded the securities lending facility in 2007. This facility allows the market to borrow Malaysian Government Securities from BNM on a reverse enquiry basis with reference to a published list of available securities. In doing so, market makers further refined their ability to provide and quote continuous prices for MGS and improve the price discovery process and liquidity in the secondary market. Under this measure, market makers are able to borrow securities via repo for two weeks for benchmark securities or one month for non-benchmark securities. The table below summarises the general terms of the facility.

Parameters	Malaysian Government Securities	
	Benchmark*	Non-benchmark
Amount available	Based on availability of securities	
Maturity terms	Up to 14 days	Up to one month
Standard Settlement		T+1
Availability		Daily

* Benchmark refers to 3, 5, 7 and 10 years to maturity of MGS

The participation of non-residents in the repo market has grown after the liberalisation of Foreign Exchange Administration (FEA) rules in April 2004. The liberalisation also allows non-residents to obtain ringgit financing through repo, subject to a limit of MYR10 million, in accordance with FEA rules on ringgit funding by non-residents.

Collateral

The securities used as collateral in the 1980s were primarily Certificate of Deposits (CDs) and Bankers Acceptances (BAs). As the ringgit bond market developed, collateral used for repo expanded to include sovereign bonds and private debt securities, with Malaysian Government Securities (MGS) being the main collateral used. The 2006 Guidance Notes on Repo allow for the use of scripless and non-scripless securities such as BAs and Negotiable Instruments of Deposits (NIDs). However, the collateral used for repo must not be convertible and must be above investment grade at the inception of the repo transaction.

The regulation also emphasised the importance of collateral management, whereby repo participants will initiate a margin call (either in the form of cash or securities) if the collateral valuation breaches the agreed margin threshold. Participants are also allowed to substitute collateral during the term of the repo with consent from the counterparty.

Market Infrastructure

Price discovery is facilitated through the Electronic Trading Platform (ETP) and over-the-counter (OTC) quotes. OTC repo transactions must be reported to the ETP within 10 minutes of the trade and this information is made available to interbank participants and BNM.

Throughout the years, BNM has made numerous efforts to ensure an efficient infrastructure is in place to support the repo market. RENTAS, the national RTGS scripless securities settlement system allows for DvP settlement of repo transactions. The forward leg of the repo trade is entered into the RENTAS system on the trade date, allowing automatic settlement of the second leg proceeds on the maturity date. This forms an irrevocable commitment to resell the collateral by the repo buyer, which minimises settlement risk.

Legal and Tax Arrangements

In 2006, legal documents for the conduct of repo transactions were streamlined by the introduction of a standard local annex jointly drafted by BNM and Persatuan Pasaran Kewangan Malaysia (PPKM)¹¹⁷. This annex is supplementary to the GMRA 2000 agreement and financial institutions are encouraged to adopt it.

For tax purposes, repos are treated as loans and repo interest is subject to corporate tax as interest income. There are no capital gains or withholding taxes in Malaysia.

Identification of Market Development Impediments and Opportunities

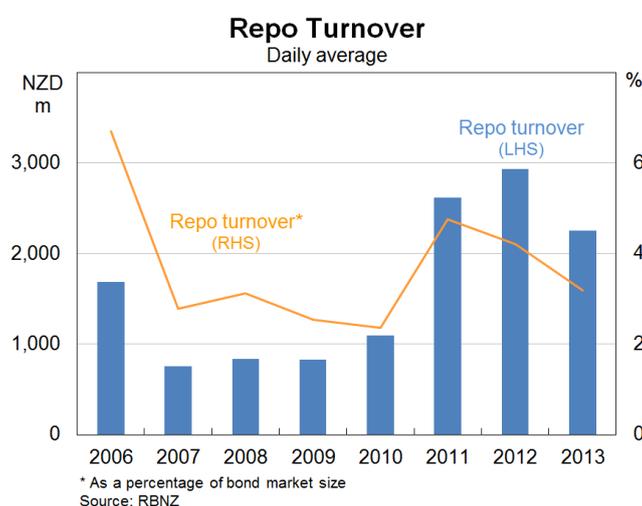
Going forward, BNM has embarked on several developmental initiatives aimed at increasing participants and allowing foreign currency funding via repo. The Guidance Notes on Repurchase Agreements and the local GMRA annex will be reviewed to allow foreign currency funding using MYR securities as collateral. This initiative will provide an alternative channel for foreign currency funding for multinational corporations to support foreign currency businesses. In addition, recognising that the GMRA agreement is a fairly complex document, BNM will convene seminars for corporate treasuries to enhance their legal awareness.

¹¹⁷ PPKM (ACI – Malaysia) is an association established by the financial institutions to actively engage in the wholesale financial markets in Malaysia.

New Zealand

New Zealand's repo market is less developed than those in most other Western economies. The primary participants are retail banks and the Reserve Bank, both of which use repo for short-term liquidity management. Unlike in some of the other more developed markets, there are no financial institutions specialising in using repo markets to take leveraged positions on the underlying securities. Two factors contributing to this absence are the limited pools of domestic savings and the lack of liquid securities markets. Prudential supervision by the Reserve Bank also limits the degree to which retail banks can undertake leveraged position-taking in the repo market. In particular, the Bank's prudential liquidity policy limits their reliance on short-term wholesale funding.

Activity in the New Zealand repo market has recovered over the past few years, with repo turnover hitting new record highs in late 2011 and again in early 2012. The Government Bond Turnover Survey indicates that repo turnover reached \$40bn per month during this period, from lows of around \$20bn in 2009. Turnover in the market for outright purchases and sales of government bonds has picked up, although to a lesser extent.



An increase in government securities issuance was a key driver of the recovery in both repo and outright bond markets. This recovery in the markets follows a period from 2004 to 2008 when there was a decline in net new issuance of government securities, as the government consistently ran budget surpluses. Over this period, liquidity in the repo market dropped and the frequency of settlements falls increased.

Offshore holders of New Zealand government bonds wishing to increase their holdings may use the repo market to fund the purchase, or can alternatively enter the foreign exchange market to access New Zealand dollars directly. Offshore investors that do not rely on leverage tend to switch between these markets depending on which offers the cheaper rate. The cost of raising New Zealand dollars through foreign exchange markets spiked a number of times between October 2011 and November 2012. The wider spread between the repo and foreign exchange forward rates is another factor that has contributed to the periodic surges in repo activity during these periods, along with elevated appetite for New Zealand government bonds among offshore investors.

Market Structure

Repos are principally used by banks for managing short-term fluctuations in their cash holdings, rather than for general balance sheet funding. Consequently, the most liquid part of the repo curve is between 1 – 14 days. Trading does occur further out the curve in the 1 – 3 month space however it is not very common. Given the small number of participants in the NZ repo market the dynamics rarely change and certain banks are often seen to be on the same side of a repo trade (i.e. some banks are normally net lenders or net borrowers of cash on a daily basis in the repo market).

The largest liquidity providers in the NZ repo market are the 4 largest local retail banks. Smaller local banks and some offshore banks also use the repo market to manage NZD positions however the government security collateral pool can be restricting. A high percentage of New Zealand Government securities are held by non-residents. As a result the smaller local banks often bid in the Reserve Bank's OMOs as a much wider selection of collateral is eligible in its operations. In August 2013 68% of NZ Government bonds and 30% of Treasury bills were held by non-residents.

The Reserve Bank is a major participant in the repo market and has, at times, contributed substantially to total market turnover. The bulk of Reserve Bank activity is due to its liquidity management operations, although the Bank also offers a Bond Lending Facility and an Overnight Reverse Repurchase Facility.

The Reserve Bank opened its Bond Lending Facility in July 2005. Banks can use this facility to borrow specific government bonds using repo agreements. The aim of the Bond Lending Facility is to prevent a shortage in a particular bond and the subsequent settlement failures that can occur.

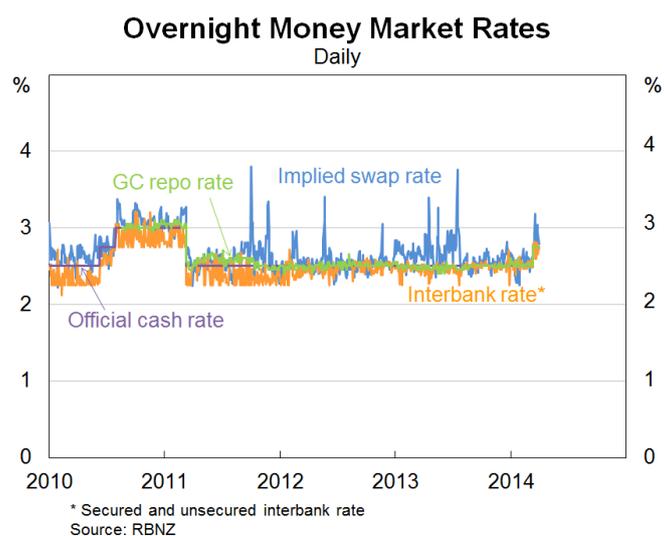
Collateral

The General Collateral classification includes only New Zealand government securities. Banks use predominately New Zealand Government bonds. Treasury-bills and inflation linked bonds are used to a much lesser extent. No other securities are used in the repo market.

The RBNZ will accept requests for collateral substitution on any of its outstanding repo transactions. In general, market participants do not substitute collateral however there are some banks that will accept requests.

Pricing

As discussed above, New Zealand's repo market is characterised by very short term trading for cash management purposes. Given the short term nature of the market, trading generally occurs close to the Official Cash Rate (OCR). The RBNZ manages the level of cash in the system with its daily Open Market Operations and FX swap dealing to facilitate the GC market trading close to the OCR.



Market Infrastructure

Repo transactions in the New Zealand market are generally executed via telephone, either directly between counterparties or through one of the two brokers in the market. Participants are able to access prices through broker pages on Reuters and Bloomberg. Trades are settled through NZClear on a DvP basis.

Legal and Tax Arrangements

Depending on the counterparty, local banks in New Zealand use either the 1992 ISDA Master Agreement (ISDA) with a New Zealand Schedule or a GMRA when transacting repos. There is a general move towards using just the GMRA agreement to simplify documentation and to be more consistent with the wider global market. Also, some offshore counterparties will only deal in NZD repo under a GMRA. A decision was made by the RBNZ to use the 2011 GMRA from 1 April 2014.

For tax purposes repos are treated as the outright sale and purchase of securities which means repo income is taxed as capital gains and there is no withholding tax as there is no “interest”.

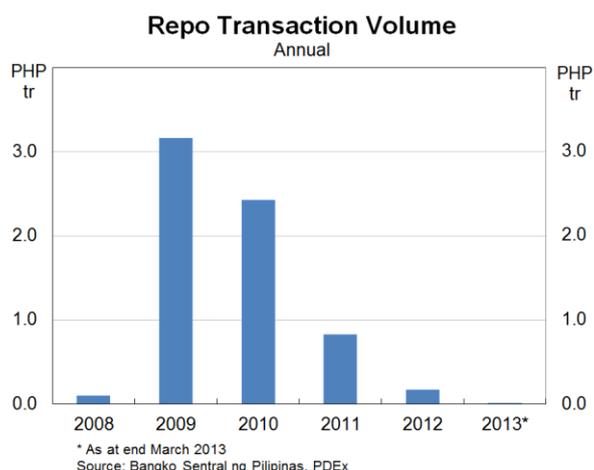
Identification of Market Development Impediments and Opportunities

In New Zealand, repo market activity is likely to remain at current levels in the near term. Repo market turnover will be supported by further growth in eligible collateral as the net issuance of new government bonds continues. In addition, banks are likely to continue relying more heavily on secured markets for liquidity management, given that their holdings of government securities have risen in accordance with the Reserve Bank’s liquidity policy.

The New Zealand Financial Markets Association has approached the New Zealand Debt Management Office and the Reserve Bank with regard to developing the market for longer-term repos. The Bank is currently considering how it might be able to assist with this, given that the development of a term repo facility would be consistent with the Bank’s aim to support the development of New Zealand capital markets. Currently the Bank can offer term reverse repo through its OMOs however these offerings are not regular which makes it difficult for counterparties to plan ahead to bid in these operations.

Philippines

The country's interbank repurchase (repo) market is in its early stages of development. Although, there are purportedly transactions dating back to the 80's, a platform was only formalized in 2008. Trade volumes have been relatively low, reaching a peak of about PHP13 billion on a daily basis and have since declined in response to concerns about the structure of the program as well as taxes on the transaction. Moreover, the country has been operating under abundant liquidity for many years, and as such market players have limited demand for repo transactions. Further, some participants also noted that these types of transactions are expensive compared to other borrowing options.



Market structure

The repo market developed in the Philippines in the 1980s, primarily between banks and their retail customers. Being a capital markets transaction, the repo proved to be an efficient tool for the banks to finance their balance sheets while providing their customers better returns than offered by regular deposits. It also provided better security for the customers due to the collateralized nature of the transaction.

This, however, posed problems for the monetary authorities as repos weakened the effectiveness of monetary tools for controlling monetary aggregates. In particular, repos enabled the faster creation of credit as they were not subject to reserve requirements given that the transaction happened off balance sheet as a deposit substitute. The Central Bank of the Philippines (BSP) eventually applied reserve requirements on these deposit substitutes which spelled the end of the product.

In the latter part of 2008, the Philippine Dealing System (PDS) Group of Companies launched the Inter-Professional Repo Agreement Market program designed to provide dealers with a mechanism for cash liquidity to support their trading activities in the outright market and ensure continued price discovery. This enabled licensed securities dealers to access funds from banks, non-bank financial institutions and qualified institutional buyers (generally trust entities) in the repo program. By participating as a cash lender, a trust entity can invest its excess cash holdings and earn a standard amount of return based on the repo rate.

The BSP uses repurchase transactions to implement monetary policy and manage reserve balances. Policy rates for the BSP's repurchase and reverse repurchase facilities signal its monetary policy

stance and serve as the BSP's primary monetary policy instruments. Repos entered for this purpose have maturities ranging from overnight to one month, with participants including Universal Banks, Commercial Banks, Savings Banks, Thrift Banks and non-banks with quasi banking functions.

Collateral

Collateral eligible under the Inter-Professional Repo Agreement Market program include securities issued by the Republic of the Philippines Bureau of the Treasury; Bangko Sentral ng Pilipinas (BSP); municipal or local government units of the Republic of the Philippines and as listed in Philippine Dealing and Exchange Corporation (PDEX); and private corporate debt securities listed in PDEX. Dollar-denominated bonds issued by the Republic of the Philippines (ROPs) or private corporate debt securities listed in PDEX are also accepted as collateral.

Collateral eligible for repo with the BSP is defined in the BSP's Charter. The BSP may buy and sell in the open market for its own account: (a) evidences of indebtedness issued directly by the Government of the Philippines or by its political subdivisions; and (b) evidences of indebtedness issued by government instrumentalities and fully guaranteed by the Government. The evidences of indebtedness acquired under the provisions of this section must be freely negotiable and regularly serviced and must be available to the general public through banking institutions and local government treasuries in denominations of a thousand pesos or more.

Pricing

There is no comprehensive data series on PHP repo pricing as the interbank repo program only began in late 2008. Nonetheless, it can be noted that these repo rates are lower than other clean short term rates because of the underlying securities, which effectively collateralise the loan and lower the risk for the repo buyer. In contrast, the unsecured interbank rate is often above the repo rate, reflecting a premium on uncollateralized transactions.

PDEX also noted that based on the feedback they received from program participants, the instrument was seen by repo buyers ("cash providers") as an alternative short-term investment to the Special Deposit Account (SDA) of the BSP and they referenced against these SDA rates.¹¹⁸ Repos are also attractive means for short-term funding for repo sellers because the effective cost of funds is lower than that of deposits at equivalent yields due to the lower reserve requirement on these transactions.

Market Infrastructure

The Philippine Dealing and Exchange Corporation (PDEX, also a PDS subsidiary) provides the trading platform and monitors compliance of all participants as well as providing clearing services for repo transactions. Price discovery is achieved through the PDEX electronic platform.

The platform is structured in a tripartite form with the Philippine Depository and Trust Corporation (PDTC, a PDS subsidiary) serving as the centralized collateral manager. Apart from holding the securities subject to the repo transactions, PDTC will also perform daily valuation of the said

¹¹⁸ Special Deposit Account (SDA) is one of the BSP's monetary tools used to siphon off excess liquidity in the system to help prevent potential inflationary pressure. It is a fixed term deposit open to banks and trust-entities of BSP supervised financial institutions.

collaterals. PDTC also calculates and calls margin on a daily basis. Settlement is on a DVP basis. Repos conducted with the BSP are not conducted on the PDEX platform.

Legal and Tax Arrangements

The SEC approved the rules governing the PDEX Repo Market Program in September 2007 while the BSP officially expressed that it poses no objection to the participation of its regulated entities in the program in January 2008. Repo trades by BSP-supervised entities in the program as repo sellers are still subject to a reserves requirement but this is much lower than those required for deposits and other deposit substitutes.

Apart from the repo confirmation between the buyers and the sellers, standard documents for the program include the PDEX inter-professional repo market program master agreement as well as the participation agreement. The Inter-Professional Repos have a transfer of title feature explicit in the Program terms and the Master Agreement. These can be described as cash-driven repos in a tri-party framework with no collateral re-use.

Repos conducted with the BSP for monetary policy purposes are settled through the Philippine Payments and Settlements System (Philpass), an RTGS system. The transfer or pledging of securities is effected through the Bureau of the Treasury's Registry of Scripless Securities (RoSS).

Repos are exempted from documentary stamp tax while the National Internal Revenue Code states that there is a 20% final withholding tax imposed on the monetary benefit from a repo as deposit substitute. The fees and charges of PDTC as a custodian are subject to GRT.

Market development impediments and opportunities

Almost five years since inception, activity on the PDEX platform remains subdued. There are a number of issues holding back the market. Market participants note that the PDEX repo market uses its own repo master and participation agreement with the users of the system instead of a Global Master Repurchase Agreement (GMRA), which is a de facto global standard for these type of transactions.

Moreover, collateral securities are lodged in the PDTC account for the tenor of the repo trade and will only be released to the repo buyer if the counterparty defaults. Banks noted that this arrangement is not a characteristic of a "true repo" and more like a collateralized loan, which is subject to taxes.

Initial guidance by the Bureau of Internal Revenue created some uncertainty about the tax treatment of these transactions. This has deterred participants from using the repo platform. PDEX is consulting with the BIR and Department of Finance on this issue. In addition, market participants find using the system a bit costly given the fees associated with it. Market participants are able to conduct repos bilaterally, but these are subject to a 20 per cent reserve requirement. The reserve requirement for repos conducted on the PDEX platform is much lower than that.

In a response to the issues around the PDEX platform, the Money Market Association of the Philippines (MART) has proposed creating an alternative Buy/Sell-back repo market. Under MART's

proposal, transactions will be similar to a classic repo but instead will be recorded as a securities transaction. Hence, a true sale of securities is recorded and derecognized from the balance sheet.

Transactions under this platform would be governed by the use of the GMRA and would be recognized as a derivative under Philippine regulations. Being a derivative, the transaction is free from any withholding taxes or DST. The income derived by the bank from the overlying transaction is, however, subject to income tax and GRT consistent with current tax laws.

In contrast with that of the PDEX platform, MART's proposal is that of a bilateral structure and transactions are envisioned initially only for the interbank market. There are no applicable reserve requirements on these transactions as it will be only between and amongst BSP regulated financial institutions. Further, only identified liquid government bonds are contemplated to be eligible as underlying instruments.

MART expects the platform will soon be tested by market participants pending approval by the BSP.

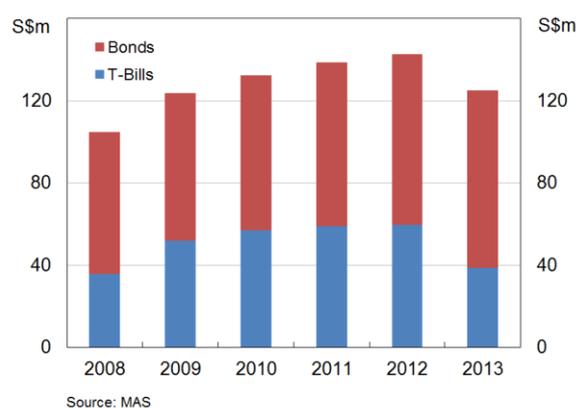
Singapore

In Singapore, repurchase agreements (repos) are used by the Monetary Authority of Singapore (MAS) to manage liquidity in the banking system. Dealers also use repo to borrow securities from the MAS to cover their short positions. Participants may also borrow funds through the repo market, though they are more likely to enter the unsecured and FX swap markets to access Singapore Dollar (SGD) funding. The local repurchase market is largely made up of overnight repo arrangements involving Singapore Government Securities (SGS).

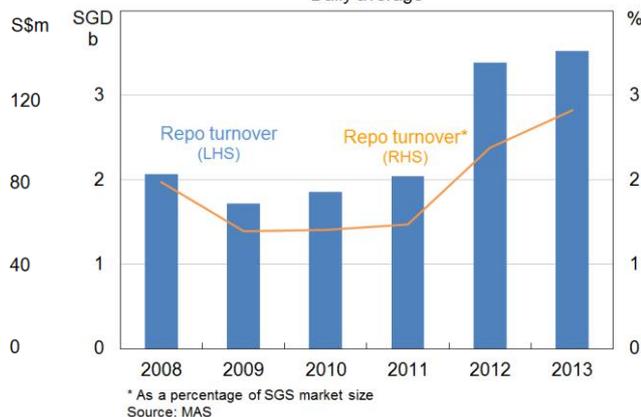
Use of the repo market has increased alongside the development of the Singapore government bond market. Before 1997, SGS were issued mainly to meet financial institutions' statutory requirements, usually held to maturity, and rarely traded. The Asian Financial Crisis highlighted the need to develop a domestic bond market and in 1998, the MAS started to take steps to build a liquid SGS market to provide a robust government yield curve for the pricing of private debt securities.

Since then, the SGS market has grown steadily from S\$105 billion in 2008 to S\$143 billion in 2012. Over the same time period, average daily volume in the SGS repo market rose from S\$2.1 billion in 2008 to S\$3.2 billion in 2012, but has not increased to the extent seen in many other countries following the global financial crisis.

Outstanding Singapore Government Securities



Repo Turnover
Daily average



Market Structure

MAS is an important counterparty in the repo market through its transactions with Primary Dealers. These transactions include overnight repos via the MAS' Enhanced Repo Facility and longer-dated repos transacted as part of the MAS' money market operations.

MAS's repo facility was introduced in 2000 and subsequently enhanced in 2010. Under this facility, the MAS lends specific securities via a reverse repo transaction, and simultaneously transacts a back-to-back general repo for an identical amount of another security. The facility is provided on an overnight basis to help primary dealers (PDs) cover any short positions in SGS arising from their market-making activity and reduces the amount of short-term squeezes in those SGS that are trading 'special' on repo.

In addition to money market operations, the MAS also offers two liquidity facilities, the Intraday Liquidity Facility and the Standing Facility, to financial institutions in Singapore. These facilities allow

the MAS to fine-tune the liquidity in the system as necessary and minimise intraday volatility in overnight interest rates. Both facilities allow eligible institutions to obtain Singapore dollar funds through repo transactions involving SGS and MAS Bills.

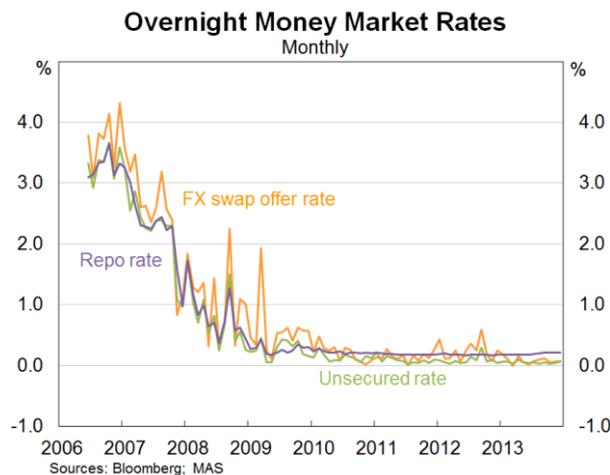
Funding via the repo market plays a smaller role in Singapore’s banking sector. Firstly, the banking sector typically has sufficient liquidity on a day-to-day basis. Secondly, domestic banks generally prefer to fund liquidity shortfalls via the deeper unsecured borrowing and FX swap markets. There are no restrictions on the entrance of foreign investors or non-dealer participants to the repo market.

Collateral

The local repo market is largely made up of repos using government securities (SGS and MAS bills) as collateral. While market participants are allowed to use other types of collateral, these transactions are rare. Securities eligible for use as collateral are defined as part of the GMRA agreements between counterparties. Under the GMRA, the substitution of collateral is allowed during the term of the repo if the seller requests and the buyer agrees to the substitution.

Pricing

One reason for the preference for unsecured funding or funding via the FX swap market over repos is relative pricing. In recent years it has been cheaper to borrow SGD overnight through FX markets and unsecured markets than through repo. The higher cost of repo funding is largely due to extremely low interest rates and the higher operational costs of repo transactions.



Prior to the current period of unusually low rates, overnight repo rates tended to be lower than equivalent rates in the unsecured and FX swap markets, due to the collateralised nature of the transaction. This was particularly true during periods of increased USD borrowing costs. The swap offer rate is also affected by the MAS’ monetary policy stance, given Singapore’s exchange-rate based policy.

Market Infrastructure

SGS primary dealers play a critical role in the local bond market. These dealers are required by legislation¹¹⁹ to provide liquidity to both the SGS outright and repo markets by quoting effective two-way prices under all market conditions (these prices are not required to be displayed on broker pages). Repo trades in SGS are mostly conducted either via brokers or over the counter.

Repo transactions between market participants have a standard lot size of S\$25 million and are settled on a T+1 basis. Parties who wish to transact a repo for a different amount and/or terms will need to specify them when requesting quotes.

All SGS repo transactions are settled outright in real-time on a delivery-versus-payment basis through the enhanced MAS Electronic Payment System (MEPS+). There are currently no tri-party repo services in Singapore.

Legal and Tax Arrangements

All market participants are expected to abide by a code of market conduct, which stipulates guidelines on trading conventions and dispute resolutions. In particular, SGS repo transactions are subject to the Global Master Repurchase Agreement (GMRA), to ensure certainty and confidence in transactions. Market participants who wish to access liquidity facilities administered by the MAS are also required to agree to MAS's terms and conditions.

Although repo transactions are settled as outright purchases and sales of securities, the tax and accounting treatment is that of a loan. Interest received from the repo is taxed as interest income and gains and losses from the transfer of securities are taxed as trading income. There are no capital gains taxes in Singapore and foreign investors do not pay withholding tax on MAS or SGS repo transactions.

Identification of Market Development Impediments and Opportunities

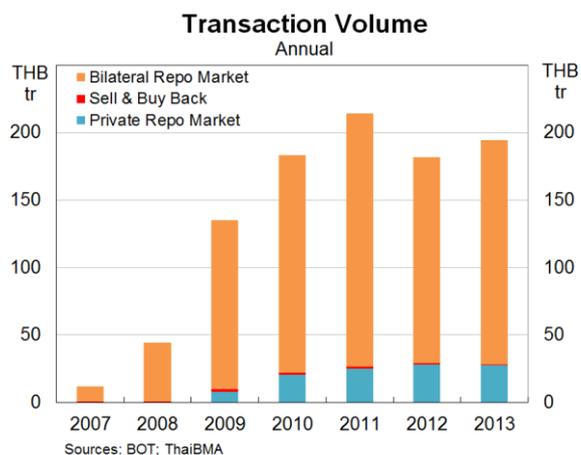
Notwithstanding the growth in the repo market in Singapore a number of market impediments still remain. For instance, the market has a sufficient level of cash, which has reduced the demand for collateralised borrowing. Market participants are able to comfortably trade on an unsecured rather than use more operationally-intensive repos.

Beyond the SGS repo market, the MAS has also taken steps to develop the domestic corporate bond market. One initiative is the establishment of a SGD corporate bond facility from which key players will be able to borrow corporate bonds. This repo platform is intended to provide greater assurance that market makers will be able to deliver securities, and reduces their risk of being squeezed in the event they are unable to cover their short positions in corporate bonds.

¹¹⁹ MAS Notice 761 stipulates the obligations of Primary Dealers

Thailand

Over three decades of development, the repurchase (repo) market in Thailand has grown, especially in the past four years, to reach an annual turnover of THB195 trillion and a market size of over THB480 billion in 2013. The repo market serves as one of the key channels of funding in the Thai financial market. The Bank of Thailand (BOT) a major participant in the market, with banks and securities companies also involved.



A repo market in Thailand was first introduced in 1979 by the BOT as a monetary policy implementation channel and as a liquidity management platform for banks and other deposit taking institutions under the BOT's supervision. The BOT acted as the counterparty to all participants with no legal transfer of ownership of the collateralised bonds, so bonds were unable to be re-hypothecated. In this market, risk management measures were not fully adopted by participants. Financial institutions were quite complacent and did not give enough importance to credit risk management, such as appraising counterparty risk and imposing credit risk limits. Haircuts were not employed and outstanding positions were not marked-to-market.

The 1997 Asian financial crisis led to massive issuance of government bonds to finance the Financial Institutions Development Fund (FIDF), used to support failing financial institutions. In order to support the growing bond market as a funding alternative to the banking sector, repo market reform was needed. The BOT embarked on a policy to encourage the development of a private repo market, which would allow financial institutions to manage short-term liquidity among themselves, build risk management expertise and provide a channel to manage bond investment and trading.

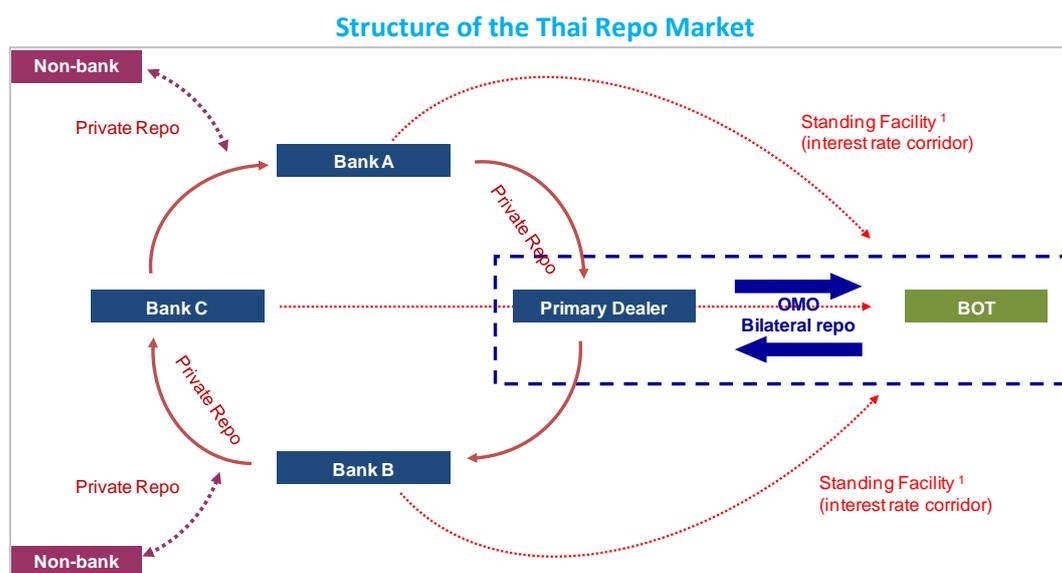
In 2000, the BOT opened a "bilateral repo market" for monetary policy implementation and adopted a Primary Dealer (PD) system where the BOT would conduct monetary operations exclusively with a group of appointed PDs. From 2002, the PDs, banks and non-banks began to participate in the "private repo market". The BOT was eventually able to completely close down the original BOT-operated repo market in February 2008.

In 2010, the BOT initiated and sponsored the development of a standard Thai language repo master agreement, with a goal to increase the penetration of repo transactions into the smaller financial institution and non-financial institution segments. This standard Thai repo master agreement was

expected to help lower legal and operational costs of each institution, and to a certain extent, lower operational risk if widely used among market participants.

Market Structure

Currently, repo transactions in Thailand can be categorized into two segments: bilateral repo transactions, conducted exclusively between primary dealers and the BOT for monetary policy operation purposes; and private repo transactions, conducted among private sector participants. The following table summarizes the characteristics of the two types of repo transactions.



¹ The BOT provides standing facilities, through which financial institutions can borrow from or deposit funds at the BOT overnight to help adjust their liquidity position at the end of the day. Financial institutions with insufficient liquidity can borrow funds by pledging eligible securities as collateral, while institutions with excess liquidity could deposit funds at the BOT.

Sell and buyback transactions are another means of financing in Thailand, although there is minimal use of these transactions in the market and their market share has fallen over time. In sell and buybacks, market participants borrow or lend cash secured with collateral, using forward contracts to sell or buy back the same securities in the future. This does not require the parties to have signed a specific legal document.

Characteristics of Bilateral Repo and Private Repo Transactions

Key Characteristics	Bilateral Repo	Private Repo
Objective	BOT monetary operations exclusively between BOT and its primary dealer	Short-term funding and liquidity management for financial institutions and other private sectors
BOT's role	Counterparty to primary dealers for OMO transactions to inject or absorb liquidity into or from the financial system	Promoting market development.
Counterparties	BOT and primary dealers	Among private sector market participants
Tenor	Usually, 1, 7, 14 - days, and 1 month.	As agreed by counterparties
Collateral	Government bonds, treasury bills, BOT bills and bonds, State-owned enterprise bonds	Any bonds whose credit rating is above BBB are eligible according to the guidelines issued by the BOT and the SEC. However, only public sector bonds whose prices are more reliable are accepted in the market at this stage.
Ownership	Legally transferred	Legally transferred
Contract and governing legal document	BOT notifications and guidelines	Any repo agreement endorsed by the SEC - which currently includes the GMRA with Thailand annex, Thai repo master agreement, and another specific agreement developed by a certain financial institution exclusively for transacting with their clients.

In 2013, the private repo market volume grew to be more than twice the size of the interbank unsecured market. In terms of repo market volume, bilateral repos accounted for around 85 per cent (THB166 trillion) of the total market volume, while private repos made up 15 per cent (THB28 trillion). Interbank unsecured transactions totalled around THB13 trillion.

The majority of private repo transactions in Thailand (76 per cent in 2013) are conducted between domestic commercial banks, branches of foreign banks, specialised government financial institutions and securities companies, which hold dealer licenses issued by the SEC. The remainder of repo transactions are between these institutions and other institutional or individual clients.

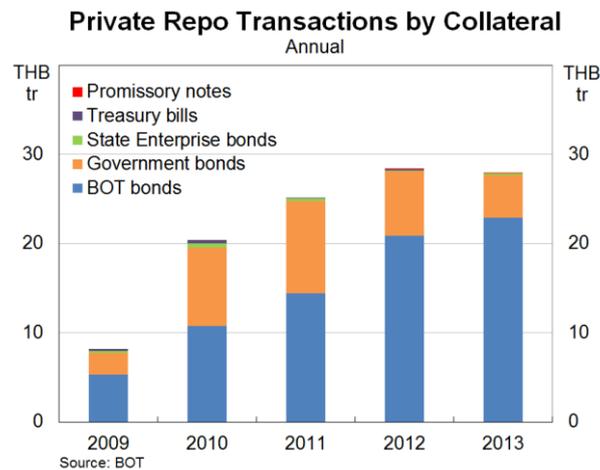
Over 95 per cent of repo transaction volume is concentrated in tenors of less than 1-month. Efforts by the BOT, in collaboration with commercial banks, to promote transactions in longer tenors have resulted in a significant increase in the use of 3-month repo instead of the 1-month tenor.

Short selling transactions can be conducted by dealers holding the Securities Lending and Borrowing (SBL) license of the SEC. If those dealers are commercial banks, they also need to be in compliance with the prudential regulations of the BOT.

Currently, foreign investors are not allowed to undertake private repo transactions in local currency or involving Thai baht denominated securities with local dealers.

Collateral

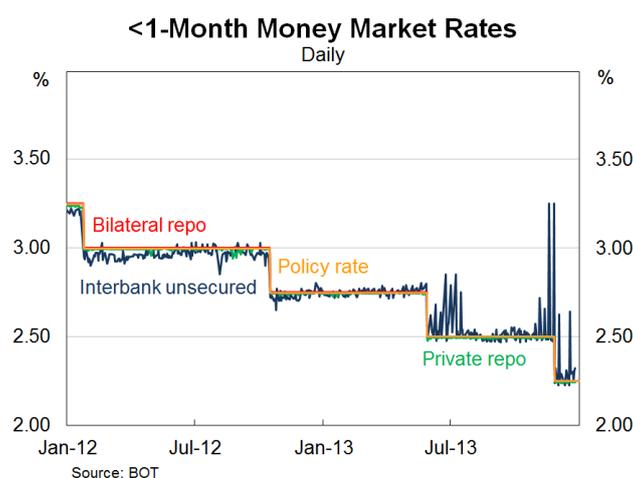
Under the BOT and SEC guidelines, a wide variety of securities can be used as collateral in private repo transactions. However, the collateral used in practice is mostly fixed rate BOT bonds and government bonds. Corporate bonds are still relatively illiquid and floating rate bonds require a more complicated mark-to-market process.



Though market participants can bilaterally agree on the haircut rates for each type of collateral, they usually adopt the haircut matrix stipulated by the BOT for its bilateral repo operations. The BOT's haircut matrix only covers securities that are eligible for bilateral repo operations with the BOT and does not cover some asset classes such as corporate bonds. Market participants are able to substitute collateral during the term of the repo.

Pricing

Since 2011, private repo transactions with tenors of less than one month have been transacted with average spreads of around 2 basis points to BIBOR.



As bilateral repos are used as the BOT's monetary policy implementation channel, their average rates have been almost equivalent to the policy rate.

Market Infrastructure

Repo transactions in the Thai market take place over the counter, with counterparties communicating bilaterally via telephone or messaging systems rather than through a centralised trading platform. Participants use information published by the Thai Bond Market Association on a weekly basis in their decision making process. This information includes average repo rates for each tenor, market share by type of market participants, collateral, trade volume and outstanding value of the transactions.

For bilateral repo and private repo transactions, clearing and settlement of transactions are conducted on an RTGS-DVP basis, through the securities depository system of the TSD. This is linked with the cash accounts of financial institutions in the Bahtnet II system of the BOT.

A tri-party repo and collateral management service was introduced by the Thailand Securities Depository (TSD) in 2006. However, the service has not been actively used and participants are very few.

Legal and Tax Arrangements

Reflecting its global acceptance and the fact that it has been tested in legal proceedings, the ThaiBMA/ISMA Global Master Repurchase Agreement (GMRA) was adopted in 2001 as a master agreement for repo transactions in Thailand. The GMRA is used in combination with a Thailand annex, ensuring that it is suitable and enforceable under Thai law.

Market participants have the flexibility to adopt other repo agreements endorsed by the SEC and agreeable to both counterparties. The SEC has endorsed two other master agreement alternatives. One of these is the Thai language repo master agreement developed under the initiative of the BOT to promote participation from smaller institutional players who prefer a Thai language agreement. The other is an agreement created by a specific financial institution for repo transactions carried out with its customers.

Tax regulations for repo transactions have been developed to help eliminate obstacles and price distortions. Capital gains tax and stamp duty on the initial sale and transfer of collateral for the seller were waived in 2000. Repo interest earned is subject to corporate income tax. The specific business tax for repo interest income, as well as its cash margin rebate, was reduced to minimal levels in 2009.

Identification of Market Development Impediments and Opportunities

Despite efforts made in developing the repo market in Thailand and the significant increase in transaction volumes and higher acceptance and understanding of market participants, areas for enhancement still remain.

There is a need for a more robust, deep and liquid repo market to accommodate the increased use of the bond market for large infrastructure financing in Thailand. More demand for collateral as a result of more diverse credit risk in financial markets and regulatory initiatives designed to ensure the stability of the financial system also support development of the repo market.

To sum up, areas that should be further developed include:

Expanding the investor base	The investor base is almost exclusively financial institutions (a share of over 90 per cent of total transaction volume in 2012). Other non-bank players such as state enterprises and other corporates should also be attracted to gain benefit from private repo transactions.
Expanding the types of securities used as collateral	Some securities such as corporate bonds and floating rate bonds are still not accepted among market participants even though they are allowed by regulations.
Lengthening the tenors	BOT bonds and government bonds were used as collaterals in almost 99 per cent of total private repo transactions in 2012. However, for bonds that are not liquid in the secondary market, lenders will be able to hypothecate such bonds only if the tenors of private repo transactions are longer than the re-opening period of BOT or MOF (usually every 1 to 3 months).
Enhancing liquidity in the bond market	In the case of Thailand, efforts to enhance market liquidity include: <ul style="list-style-type: none"> • announcements of planned issuance; • market consultation in advance of re-openings of government and BOT bonds in the primary market; and • imposing certain bidding and market-making requirements on primary dealers through the PDs' privileges and obligation mechanism.

The imposition of a 0.46 per cent fee on funding arrangements, including repos, entered into between banks and non-bank counterparties since May 2012, has created an obstacle in the efforts to develop the repo market. The objective of this fee is to finance the debt accumulated by the Financial Institution Development Fund (FIDF) in its role of rescuing troubled Thai financial institutions during the 1997 financial crisis. The financing duration is expected to last for 25 years. Although repo transaction volume between banks and non-bank counterparties has fallen since the fee's imposition, the fee has been kept in place because private repos could serve as a loophole to other fund raising alternatives for banks to avoid paying the fee.

Concluding Remarks

Repo markets are widely regarded as a key element of a developed financial markets landscape. Active repo markets enhance price discovery in the underlying markets and contribute to market depth and resilience. Repos also play an important role in the liquidity management operations of central banks.

There are a number of factors that are likely to make repo markets even more important in the medium term. One is the trend away from unsecured financing and toward secured financing that has followed the global financial crisis and that is being driven in part by regulatory incentives. Another is the shift to the collateralisation of market exposures and the use of central clearing which are both being driven by the regulatory reform of OTC derivatives trading.

Against this background, the WGFM undertook a high level 'stock-take' of repo markets across the region. This work had several objectives:

- To gather data on these markets in a uniform manner.
- To obtain an understanding of how these markets had developed and what position they occupy in each jurisdiction.
- To identify impediments to growth in these markets.

All jurisdictions have some form of regular data gathering process and in most cases the provision of data is mandatory. In most jurisdictions, regulators have access to detailed transaction level data even if they do not currently collect it. There would appear to be scope to improve the extent to which this data is disseminated but much of the data that one might want already exists.

Not surprisingly, repo markets vary significantly across the region in terms of their importance in financing and securities market function. Several markets are not as large or as active as might be expected given the size of the underlying debt markets. This is true even in some of the most advanced financial markets in the region. Moreover, there is little evidence of market deepening in many jurisdictions; notable exceptions being China, Korea and Thailand.

With one or two exceptions, it does not appear that this situation can be attributed to legal or tax arrangements or poor market infrastructure. It is clear that the authorities in all of these jurisdictions have focused at some point on this market and have tried to put in place arrangements to facilitate market activity. It would appear that the relative lack of scale can be attributed in most cases to:

- A traditional reliance on unsecured funding
- A long period of excess liquidity
- A relative lack of counterparty risk aversion given long histories of performance and rating upgrades.
- Relative pricing between secured and unsecured funding that makes participants reluctant to engage with the product given the additional operational complexities and obligations.

In summary, the pre-conditions for repo markets to assume more significant roles in many EMEAP financial markets are in place. While market participants on both the sell and buy sides in many of these jurisdictions have not yet embraced repo, these markets can be expected to become more active if market conditions evolve to incentivise the use of repos.

In a few cases, there do appear to be impediments that are associated with tax, legal or infrastructure arrangements. Initiatives to increase participation and activity are underway in several jurisdictions including Indonesia, the Philippines and Malaysia. Tri-party repo solutions are being introduced or reviewed in a number of markets. Some of this work is being led by central banks and some by the market. Authorities should continue to focus on removing any obstacles to the growth of repo markets in the region.