

Repurchase Agreements

Important Stimulus to Financial Market Development

Sheila Tschinkel

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Discussion Today

- Show how central banks use repos in open market operations
- Repos compared to other operations
- Risks
- Supervision
- Repos in different countries
- Points for Ukraine to consider

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Macroeconomic Policy

- Fiscal policy controls government spending and taxation
 - A deficit stimulates nominal aggregate demand
 - A surplus reduces nominal aggregate demand
- Monetary Policy influences, but does not control, financial flows in an economy
 - Affects interest rates
 - Affects exchange rates
 - Relies on financial markets to transmit policy and affect behavior
 - Can only be conducted in market economies

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Monetary Policy

- Influences financial variables to achieve public goals, most often a target for inflation
 - Central bank manages its balance sheet and affects interest rates, exchange rates and monetary quantities
 - Central bank relies on financial markets to work as transmission mechanism and push its policy through the economy
 - Clear implication is that monetary policy requires financial markets to work effectively

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Central Bank Balance Sheet

Assets

- Foreign Exchange Reserves
 - Held or bought/sold under swap agreements
- Government Securities
 - Outright
 - Held under reverse repos
 - (Sold under repos)
- Loans
- Other Assets

Liabilities and Capital

- Currency in Circulation
- Bank Current Accounts=Required + Excess Reserves
- CDs or central bank bills
- TSA (government deposits)

- Other Liabilities
- Capital

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Direct Controls

- Reserve Requirements
 - Are a tax on banks-more fiscal than monetary policy
- Loans to banks or companies
 - Make central bank choose “winners”
 - Subject central bank to potential losses-more fiscal than monetary policy
- Direct controls are negative for economic growth
 - They work against development of financial sector and markets
 - No market process is involved
 - Over time, they can be avoided

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Indirect Controls

- Repos and Reverse Repos
- CDs and Central Bank Bills
- Foreign Exchange Swaps
- Indirect controls involve transactions in financial markets—open market operations.
 - They encourage economic and financial development
 - They demonstrate best practices
- Our focus today is on Repos and Reverse Repos, but we will consider alternatives.

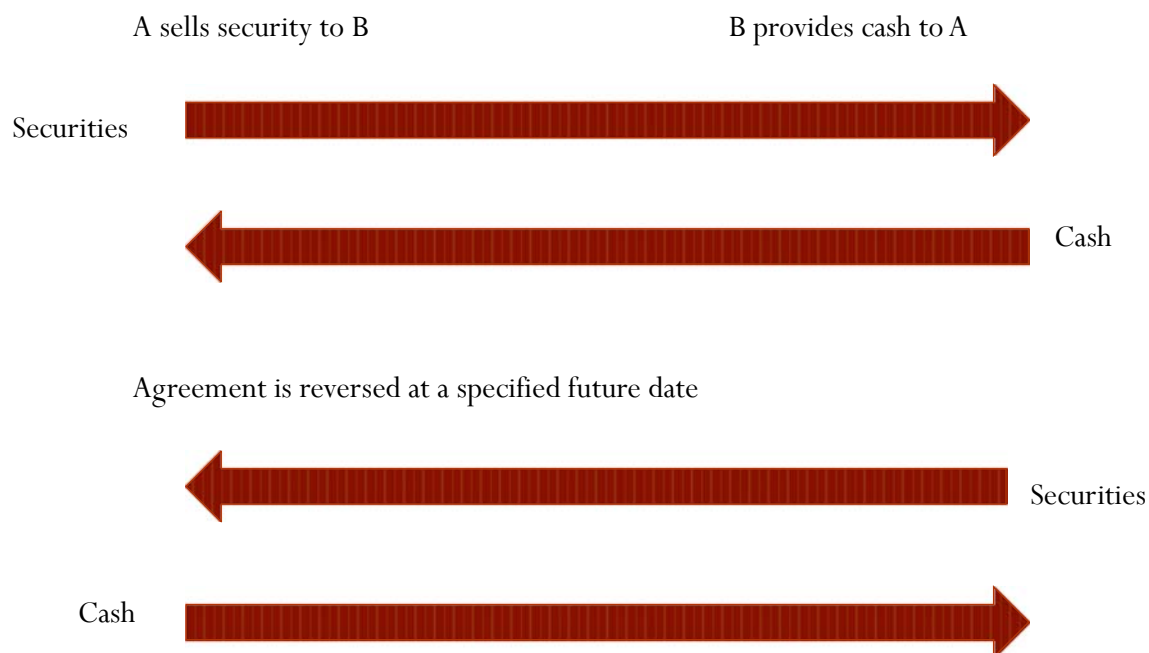
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Repurchase Agreement

- Repurchase Agreement (repo) is an agreement to sell a security and repurchase it at a specified future date
 - Agreement specifies prices at the start and end. The price difference reflects an interest rate or rate of return
- Reverse Repurchase Agreement (reverse repo) is a purchase of a security with an agreement to sell it back at a specified future date
- Repos and reverse repos using government securities are used by central banks in conducting open market operations in most countries

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Repo flows



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Central bank repos and monetary policy

- Repos used in countries that follow inflation targeting
 - Czech Republic
 - Poland
 - Brazil
- Repos used in countries that have a *de facto* target for the foreign exchange rate
 - Russia
 - China
 - Brazil, which sometimes has exchange rate goal
 - More actively used in other Asian countries
- Repos used in countries with mixed targets
 - India
- If central bank holds government securities, repos are possible

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NBU Balance Sheet 31/12/2009

Millions of UAH

Assets

- Foreign Currency and Reserves **215289**
- Domestic Securities **45899**
- Loans to Banks and Others **73964**
- Other Assets **28029**

Total Assets **363181**

Liabilities and Capital

- Currency in circulation **170536**
- Bank Current Accounts **23359**
- TSA **2217**
- CDs **3421**
- Other liabilities **67559**
- Capital **96089**

Total Liabilities Plus Capital **363181**

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Repos versus outright purchases and sales of government securities

- Repos preferable under conditions of uncertainty
 - Greater flexibility
 - Central bank may not be sure how long need to add or absorb reserves will persist
 - Market participants are more willing to sell or buy for short periods
 - Repos help develop the money market and the government securities market
 - Make it easier to use outright transactions in the future

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Alternatives to repos and reverse repos

- Loans to Banks and CDs
- Foreign Exchange Swaps
- Industrialized Economies mainly use repos and reverse repos
 - Some still use FX swaps
 - Central bank CDs and bills not used
- Emerging economies use a mixture
 - Reduced use of central bank CDs and bills over time
 - Still use FX swaps
 - Increased use of repos and reverse repos because it fits with need to develop market for government securities

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Repos compared to CDs

- Central Bank does not usually rely on market in these older transactions
 - Do not encourage development of secondary market trading and interest rates—more “buy and hold” transaction for banks
- Repos help the government securities market develop
 - Encourage secondary market trading of securities with nearby maturities
 - Develop yield curve
 - Improve secondary market
 - Make government debt more attractive
 - Foster development of securities depository and settlement facilities
- Repos avoid trading government and central bank debt in same market at same time
 - Can avoid the same maturities, but difficult because maturity of all debt obligations shortens as time progresses
 - Interest rate comparisons usually not beneficial

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Repos Compared to FX Swaps

- They are comparable transactions
 - Both use and require a money market interest rate
- FX swaps easier to do in emerging market because currency market usually more developed
- FX swaps less flexible due to settlement lags
- Temptation to use FX swaps to influence exchange rate can make them very risky—as Asian crisis showed
- Repos develop government debt market and FX swaps do not
 - Needed as long as there is a deficit!

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Warning!

- Discussion of Repos will emphasize risks
 - They exist
 - Repo markets “froze up” in financial crisis and remain a subject of concern to regulators everywhere
- BUT: Repos are a critical step in financial market development
- BUT: Repo markets for government securities performed reasonably well in view of depth of crisis

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How to view repos

- They are a collateralized loan
- They are an outright cash transaction linked to a forward or futures cash transaction
- They are a form of swap transaction
- In addition to usual counterparty and instrument risks, there is risk that legal, regulatory, accounting and tax treatments are inconsistent or change
 - This has been an issue in many countries
 - Most often resolved with legislation

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Differences between repo and outright purchase or sale

- Collateral must be managed during the life of the repo, not only at start
- Two settlement processes
 - One for purchase “leg”
 - One for repurchase “leg”
- Potential need to liquidate collateral in event of default

Note: The term “leg” refers to each part or side of the two transactions

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Risks associated with repos

- Counterparty-Who you do business with
- Issuer-Risk and price volatility of underlying security
 - For government securities only interest rate risk is of concern
- Market infrastructure
 - Pricing, valuation, depository and settlement facilities
- Legal infrastructure-
 - Outright transactions or loans?
 - Contract law and agreement used
 - Default procedures-bankruptcy and insolvency laws
- Taxes-Income, capital gains and transactions taxes may depend on how authorities view transaction
- Regulatory and Accounting issues
 - Do securities remain on balance sheet?
 - Do transactions affect capital requirements?

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Classic Repo

- Sale and future repurchase in one contract
 - Coupon payments go to seller
 - Price risk falls on seller
 - Issuer default risk falls on seller
 - Lender usually receives margin because lender holds less liquid asset
 - Substitution of similar securities often allowed
- Risk: transaction is re-characterized as a loan and buyer cannot dispose of collateral in the event of default
 - This risk has been solved by local law in countries where repos are done

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Sale/Buyback

- Two separate legal contracts
 - Coupon payments go to buyer-buyback price reflects this
 - No provisions for risk management
 - No collateral substitution permitted
- Documentation critical
 - International Master agreements now contain special annexes for sale/buybacks so they can be treated as a single transaction
- Counterparty risk protection has required support from local law
 - In countries where this has not been done, market has not developed
- Even minimally documented sale/buyback transactions are treated as loans for accounting purposes in most countries
 - Recent developments tend to affirm this view
- Tax uncertainties have been a problem in many countries

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Repo history and use

- Introduced by central banks, starting in US
- Spread to Europe in 1980s and 1990s
 - Expansion of types of collateral in many countries
- Spread to emerging markets in 1990s
- “Run” on repo market in 2008 contributed to financial crisis
 - Activity now close to levels at that time, although relatively more now use government debt

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Repo use

- Repos using government debt now a central bank tool in most countries
 - Even in countries with *de facto* exchange rate targets
 - Exceptions for countries with *de jure* exchange rate pegs
- Difficult to find a country that has no repo market or has not tried to develop one
- Repos finance securities dealer positions
- Repos are short term investment
- Government use of repos and reverse repos is rare
 - Requires legal clarification about debt retirement and debt ceilings

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Why develop a repo market?

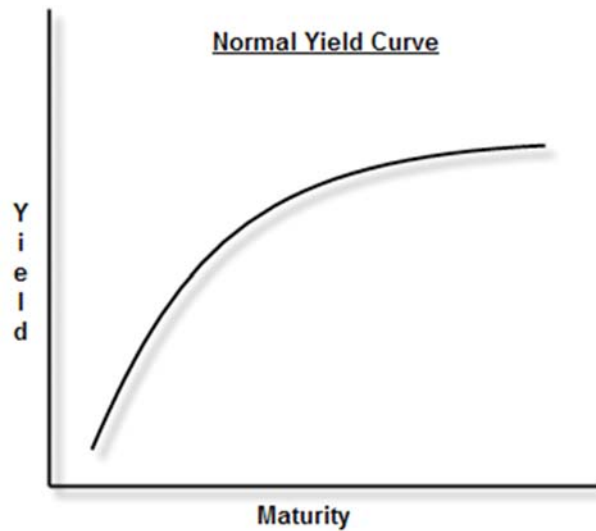
- Repos are a “bridge” from money market to bond market to yield curve
 - Help develop the money market
 - Help develop secondary market in government securities
 - Help develop risk free yield curve
- Enable central bank to conduct domestic anti-inflationary monetary policy
 - Encourage a move from direct (controls) to indirect operations
- Enable private financial markets to develop rapidly

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Repos using Government Securities



≡ Risk Free Yield Curve



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Risk Free Yield Curve “Benchmark”

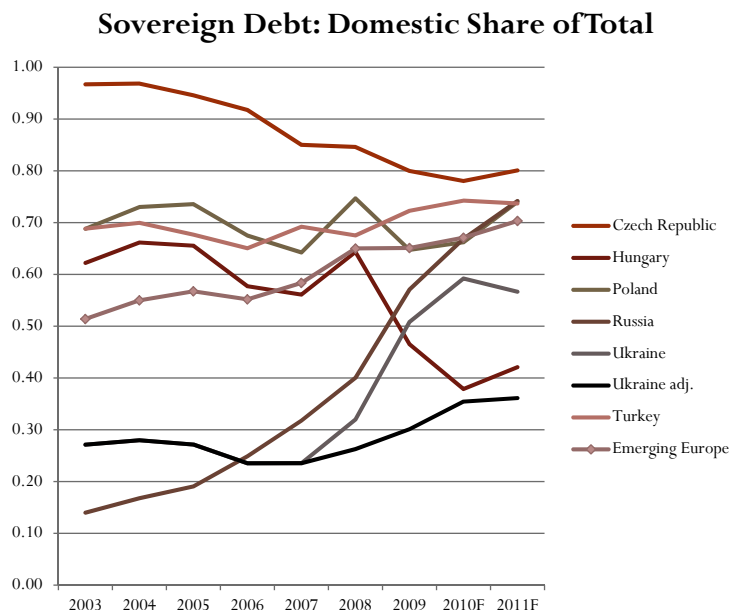
- Foundation for derivatives market
 - Interest rate needed to link cash and future/forward transactions, no matter what is being traded
 - Private yield curve may not develop if no risk free curve
- Foundation for private debt and loan markets
 - Helps private debt issuance grow
 - Helps banks set terms for private loans
 - Reduces demands on public sector agencies to make loans to private companies
 - Reduces exposure of government to potential losses
 - Reduces need to use controls to limit borrowing in foreign currency
 - Controls only work temporarily

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Domestic Government Securities Market

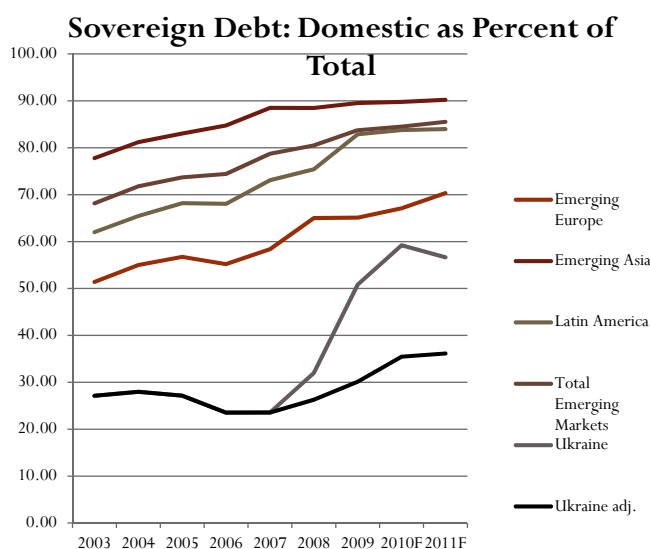
- Reduces dependence on external lenders to meet government financing needs
 - Reduces the cost of public debt
 - As seen in the history of external debt and how subsequent currency depreciation removed initial apparent interest rate savings
 - Reduces vulnerability to financial crises
 - Examples
 - Swiss central bank substituted government security repos for foreign currency swaps to manage liquidity after the 1998 Asian and Russian crises
 - Asian economies developed domestic debt markets after crisis of 1998
 - Asian economies fared much better in 2008 and after
 - Makes it easier to implement inflation targeting monetary policy
 - Develops the “interest rate channel”

Government debt market in Ukraine less important



Ukraine adj: adjusts for debt bought by NBU at predetermined prices during crisis

Government Debt Market in Ukraine Compared to Emerging Markets



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Ukraine adj: adjusts for debt bought by NBU at predetermined prices during crisis

Repo Market Basic Requirements

- Ability to discover interest rate and security prices and to value collateral
 - Procedures for taking and receiving margin
 - Procedures for coupon flows
- Securities depository that links to a payment system so that DVP occurs or/
- Well capitalized third party manager linked to both systems
- Legal clarity about liquidation of collateral in case of failure

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Repo Market Supervision

- Related to government securities market supervision
 - This is not usually done by securities supervisory agencies
 - Ministry of Finance should not “report” to agency
 - Central bank should not “report” to agency
 - Distinguish between supervision of transactions with individual economic units and transactions in private securities, versus MOF and central bank operations
- Supervision changing since crisis: Many countries introducing stricter standards
- For debt issuance and monetary policy, concentrate on Primary Dealer System
 - The best alternative is one where the finance ministry and central bank jointly specify requirements because:
 - Ministry auctions debt and issues
 - Final payment usually made in central bank money
 - Open market operations always at central bank initiative and central bank bears credit risk
 - Debt management agency transactions only at private banks

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Primary Dealers and Their Supervisors

- Emerging Market Economies:
 - Ukraine (Ministry of Finance)
 - Argentina (Ministry of Finance)
 - Brazil (Central Bank)
 - Czech Republic (Central Bank)
 - Hungary (Debt Management Agency within MOF)
 - India (Central Bank)
 - Kazakhstan (Ministry of Finance and Central Bank)
 - Korea (Ministry of Finance)
 - Mexico (Ministry of Finance and Central Bank)
 - Thailand (Central Bank)
 - China (Central Bank)

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Data may need revision-no updated surveys available

Primary Dealers

- Purchase debt at auctions
- Transact with central bank
- Best if Ministry of Finance and central bank work together to develop requirements and sanctions
 - Capital
 - Participation in auctions, central bank operations and in secondary market
 - Brazil has two categories of Primary Dealers
 - One group of 12 participates in auctions and open market operations
 - Second group of 10 is active in secondary market

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Recent Developments Can Affect Market Development in Ukraine

- Introduction of IFRS in Ukraine in 2012
 - IAS 39 will be gradually replaced by IFRS9
 - Securities held for liquidity management need to be valued at “fair market value”
 - NBU has prepared for this and is ready
 - Repos will be considered a collateralized loan for regulatory purposes
 - The collateral will remain on the balance sheet of the “borrower”
 - No exemption noted for sale/buyback transactions
- Introduction by NBU of foreign exchange swaps in UAH
 - An alternative for bank liquidity management

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Possible Steps in Repo Market Development In Ukraine

For bilateral agreements

- Working group to consider legal and tax questions in advance
 - Assume IFRS clarifies accounting
- Develop local master agreement with annex for sale/buyback if needed (change standardized agreements)
- Resolve issues about securities depository
- Ensure DVP for each leg
- Ensure best practices for risk management procedures
- Consider working with group developing legislation on derivatives to include changes needed for repos
- Encourage NBU to use repos in addition to or instead of CDs and FX swaps
 - IFRS adoption means government securities already at fair market value

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Success Requires Central Bank and Finance Ministry Coordination

- Evident in all countries, even when State Treasury is separate and even when both do not jointly supervise Primary Dealers
- Avoid disputes over internal pricing within the public sector
 - Even though ministry of finance should receive interest on deposits at central bank, central bank pays earnings to government so net budget effect is minimal
- Treasury Single Account should not be managed as account in private bank
 - Shifting TSA money to private bank increases risk
 - Shifting TSA money to state owned bank weakens monetary policy authority of central bank

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Management of TSA requires coordination

- Variations in the TSA affect the balance sheet of the central bank
 - They can change the volume of high powered money
 - They can affect the volume of international reserves and the exchange rate

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Central Bank Balance Sheet

- | | |
|---|---|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">● Purchased Outright● Purchased under reverse repo● (Sold under repo)○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts• Currency in circulation• TSA• CDs or securities issued• Capital |
|---|---|

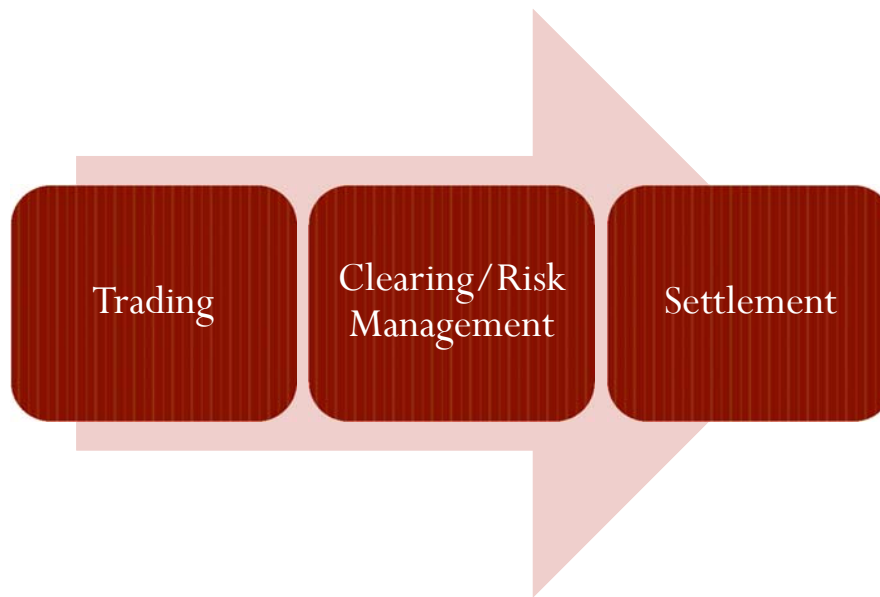
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Conclusions

- Repo market is important need
 - Absence of risk free yield curve means monetary policy transmission mechanism is too weak
 - Absence of risk free yield curve retards economic development
- Experience of other countries shows coordinated approach is most effective
 - Minimizes need for legislation
 - Work on repo market benefits other markets
- Do not expect everything to happen at once

Appendix on Repo Processes

Repurchase Agreements-Processes



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Trading

- Documentation-Standardized Agreement: Used for classic repos and sale/buybacks
- Price Discovery
 - How often particular securities trade
 - Bid/Offer spreads
 - Risk free yield curve to link cash and future legs
 - Perhaps use interbank market yield curve as substitute
- Trade Execution
 - Automated System
 - Over the Counter

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Clearing and Risk Management

Specified in Documentation

- Bilateral repo
 - Each side is responsible for entering trade data and payment instructions
 - Each side responsible for collateral management as specified in contract
 - Substitution and reuse of collateral varies for classic repo
- Tri-party repo using separate contract with third party
 - Paper work done by third party
 - Collateral managed by third party
- Both types can use central counterparty (CCP) for settlement, collateral management and liquidation
 - More common in cross border repos or in countries with significant financial infrastructure

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Clearing and Risk Management

Dependent on trading infrastructure

- Trade Capture and Verification
- Trade Matching/Affirmation/Legal Confirmation
- Novation (If using CCP): Usually requires legislation on netting
- Trade/Portfolio Valuation
- Portfolio Reconciliation
- Collateral Management

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Settlement

- Money/ Cash Flow Settlement
 - Purchase and repurchase leg settled on same payment and securities settlement systems used for buy-sell transactions
 - Always DVP, however achieved
 - Most often in central bank money
 - There are exceptions, most likely when private securities used
 - When novation and private securities used, central bank money used at end for finality
- Transfer of Title

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Repo Market Basic Requirements

- Ability to discover interest rate and security prices and to value collateral
 - Procedures for taking and receiving margin
 - Procedures for coupon flows
- Securities depository that links to a payment system so that DVP occurs or/
- Well capitalized third party manager linked to both systems
- Legal clarity about liquidation of collateral in case of failure

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Appendix: Central Bank and MOF Interaction

- Changes in the TSA affect high powered money
- May need to be offset
 - Affects interest rates
 - Disturbs exchange rate
- Illustrated in following slides

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Central Bank Balance Sheet

- | | |
|---|--|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">• Purchased Outright• Purchased under reverse repo• (Sold under repo)○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts• Currency in circulation• TSA• CDs or Central Bank bills• Capital |
|---|--|

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Central Bank

Government spends and **TSA falls by 100 in the domestic currency**

- | | |
|---|---|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">• Purchased Outright• Purchased Under reverse repo• (Sold under repo)○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts +100• Currency in circulation• TSA -100• CDs or securities issued• Capital |
|---|---|

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Central Bank

Reduces bank reserves to their original level by issuing CDs

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|---|--|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">• Purchased Outright• Purchased under reverse repo• (Sold under repo)○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts +100 -100• Currency in circulation• TSA -100• CDs +100• Capital |
|---|--|

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Central Bank

Reduces bank reserves to original level with repo

- | | |
|--|--|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">• Purchased Outright• Purchased under reverse repo• (Sold under repo) -100○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts +100 -100• Currency in circulation• TSA -100• CDs or securities issued• Capital |
|--|--|

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Central Bank

Reduces bank reserves to original level with swap

- | | |
|---|--|
| <ul style="list-style-type: none">• Assets<ul style="list-style-type: none">• International Reserves - 100• Domestic Assets<ul style="list-style-type: none">○ Government Securities<ul style="list-style-type: none">• Purchased Outright• Purchased under reverse repo• (Sold under repo)○ Loans to banks | <ul style="list-style-type: none">• Liabilities<ul style="list-style-type: none">• Bank Current Accounts +100 -100• Currency in circulation• TSA -100• CDs or securities issued• Capital |
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