The economic role of Repo markets

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Definition and characteristics of repo markets

An understanding of the economic importance of repo markets is necessary for us to appreciate the benefits that repos provide to market participants and their usefulness as a monetary policy instrument for the central bankers. Repo markets are markets in which securities are exchanged for cash with an agreement to repurchase the securities at a future date. Hence, this is a financing arrangement used primarily in the government securities markets (Repo deals in other demat debt securities are also allowed in India) whereby a dealer or other holder of government securities sells the securities to a lender and agrees to repurchase them at an agreed future date at an agreed price which will provide the lender with an extremely low risk return. Such a transaction is called a repo when viewed from the perspective of the supplier of the securities (the party acquiring funds) and a reverse repo or matched sale-purchase agreement when described from the point of view of the supplier of funds.

Repos are hybrid transactions that combine features of both secured loans and outright purchase and sale transactions but do not fit cleanly into either classification. The use of margin or haircuts in valuing repo securities, the right of repo borrowers to substitute collateral in term agreements, and the use of mark-to-market provisions are examples of repo features that typically are characteristics of secured lending arrangements but are rarely found in outright purchase and sale transactions. The repo buyer's right to trade the securities during the term of the agreement, by contrast, represents a transfer of ownership that typically does not occur in collateralized lending arrangements. Repos are very popular in developed markets because they can virtually eliminate credit problems.

Repo is a collateralized lending and borrowing mechanism between market participants. Repo markets are generally separated into markets for “general” and “specific” collateral. In the latter case, a piece of specific collateral is identified in the repo contract making it possible to obtain specified securities. Other transactions such as buy/sell-back agreements and securities lending versus cash transactions have somewhat different legal and accounting treatments. It is increasingly common for repos to contain substitution clauses that gives a right of substituting alternative securities as collateral over the life of the repo.

Repo transactions may be of any maturity, but are generally of a short maturity, between overnight and 14 days in India and in other developed countries even upto 1 year. The maturity of repo agreements can fall into at least three descriptive categories: overnight, open and term. Overnight refers to repos with a single-day maturity whereas term maturity refers to repos that have a fixed maturity longer than one day. And open maturity repos are repos where both parties have the option to terminate the repo each day. Risk in repo markets comes mainly from volatility in the value of the collateral. To reduce this risk, cash lenders typically require margin or haircuts.

Since a Repo transaction involves the sale of an asset under an agreement to repurchase the asset from the same counterparty, interest is paid on the amount of funds lent. A reverse repo is the purchase of an asset with an agreement to re-sell the same or a similar asset. The settlement and custodial arrangements associated with a repurchase agreement are an integral element of the transaction. Depending on the form the transaction takes; the party lending cash could have a small or a large credit exposure to the borrower. There are several types of custodial arrangements:

- A *hold-in-custody repurchase agreement* refers to a trade in which the repoer receives cash from the lender but continues to hold the collateralizing securities in custody for the lender of cash.
- A *deliver-out repurchase agreement* is where securities are delivered to the cash lender's custodian in exchange for funds. So long as the securities are correctly valued and delivery is made versus payment an intra-day credit exposure is eliminated.
- A *tri-party repurchase agreement* is similar to a deliver-out repurchase agreement, where the securities serving as collateral are held by an entity other than the securities borrower, except that a third-party custodian is typically used. The third party ensures that the collateral meets the cash lender's requirements, and provides valuation and margining services. Since a tri-party repurchase agreement offers a convenient and efficient means of taking and delivering collateral, and since fees are generally low, this form has become the primary form of repurchase agreement for securities dealers in the United States.

A sell/buy-back is two distinct outright cash market trades, one for forward settlement. The forward price is set relative to the spot price to yield a market rate of return. This structure is relatively simple in operational and legal terms, and so is more common in emerging markets. Typically, however, sell/buy-backs do not allow for marking to market and margin calls, which can result in larger counterparty risks than those of securities lending or repurchase agreements.

The economics of repo markets

The economic significance of a repo transaction derives from the fact that they allow one party to temporarily exchange cash for securities and the other to temporarily exchange securities for cash. From a legal point of view, a key feature that makes the repo contract attractive is that the legal transfer of securities for the duration of the contract provides protection against credit risk. It improves liquidity in the market as people having shortage of funds could borrow the same and invest in the market.

In addition to participants supplying cash or securities to repo market borrowers, a third group, repo market intermediaries, plays a key role in addition to that of administering transactions. Their arbitrage and speculative activity is important in facilitating price discovery, especially for those seeking specific securities, and in providing liquidity. In India we do not have such categories of intermediaries neither we have speculation in the Repo and Government securities market.

Use of repos to obtain funds, for leverage and to take long positions

The use of repurchase operations to obtain funds is perhaps the most straightforward use of this transaction, as it can be compared to a collateralized loan. From this point of view, the principal merit of repos is the generally lower cost of financing relative to the uncollateralised market. For the lender of cash, the advantage is the provision of collateral to limit credit risk. Another fundamental use of repo transactions is to fund "long" positions in securities. Specifically, repos can be used to build up leveraged long positions in securities markets since securities lenders maintain their exposures to the securities they have repoed out.

Use of repos to obtain securities and to take short positions

A valuable feature of repo markets is that they can be used to facilitate the taking of "short" positions in securities markets. Using repos, participants can borrow securities for delivery in exchange for cash using the proceeds from the cash sale as collateral in the transaction. This allows participants to sell a security they do not own by borrowing it from another party in the repo market. Without a repo market securities market participants would be unable to establish short positions (In India, taking short positions are prohibited). One key reason for taking short securities positions is to hedge interest rate risk. In this way, repo transactions serve a very important function – they facilitate the establishment of interest rate hedges and thus play an essential role in risk management.

Role of arbitrage and speculative activity in repo markets

In international markets, repo market intermediaries play an important role by facilitating price discovery and providing liquidity through their arbitrage, market-making and speculative activity. This often takes the form of direct trading of the repo rate itself, a practice called matched-book trading. It involves the borrowing of securities or cash through the repo markets with the intention of re-lending the cash or securities at more favourable rates in the same market. This trading earns market makers or dealers a small spread (usually a few basis points) and facilitates price discovery, enabling customers to obtain funding or securities on more favourable terms. Speculative trading involves taking a position based on a forecast of the direction of rates. It can take the form of mismatching the maturity of repos and reverse repos, which is equivalent to speculating on the future direction of repo rates. This might also be viewed as taking a position with respect to movements in the shape of the repo yield curve

Relation of repo markets to the uncollateralised markets

Repos are typically carried out between participants that are also active in uncollateralised money and interbank markets, reflecting the functional similarity between the instruments traded in these markets. In India Banks are major repo players and the activity in the market increases when there is liquidity crunch. There may be a tendency to substitute repos for unsecured credits because repos perform the same cash borrowing or lending functions as these credits but are collateralised and thus carry lower credit risk. In addition, repos can be used to borrow securities, a function not provided by the uncollateralised money market.

Impact of repos on securities markets

The existence of a repo market supports liquidity in securities markets, according to market participants, as repos facilitate position-taking in securities markets. Repo markets can also be a source of demand for securities that serve as collateral. In some instances, the supply of securities in repo markets can be increased by stock-lending agreements. Such agreements enable an institution to lend its securities to a repo market participant, and receive in exchange either a fee or another security not used in repo contracts, or both. They allow institutions that hold securities but do not want to (or are not allowed to) participate directly in the repo markets to earn a higher return. These types of arrangements are common in several countries (especially in the United Kingdom). Since repo markets support securities markets, securities issuers sometimes take steps to promote them.

Repo Market In India:

In India repo is increasingly used by RBI as a tool for moderating money supply in the economy. Earlier RBI used to have Fixed Repo which was discontinued from 5th June 2000 and in its place RBI introduced Liquidity Adjustment Facility. Under LAF, RBI conducts daily Auction of Repos and Reverse Repos to inject and sterilize liquidity from the system. RBI normally conducts one day (daily) and three day (on Friday) Repos. From May 11, 2001, LAF is being conducted at multiple rates. To widen the repo market and to provide more depth to the market, non-Bank entities who were allowed only reverse repo were freed to do both and minimum Repo days were reduced from 3 to 1 day and repos were allowed to be undertaken in all PSU bonds and bonds issued by corporate and FIs held in demat form. It has been declared that non-bank entities who were allowed to participate in call market would be phased out from the call market in various stages and once RTGS in place, the call market would be only restricted to banks and PDs. This would enhance the activities in the repo market. The following table will give the total volume of Exchange Traded Repo in Indian market:

Financial Year	Amount of Total Repo Traded (Rs. Crores)
1998-99	4864.50
1999-2000	2295.70
2000-2001	1600.00
2001-2002 (upto September)	347.60

In developed markets like US, repo outstanding run into billion dollars. The average daily outstanding figures in US market from 1981 to 2001 is given below:

Year	Average Daily amount Outstanding ($ Billions)
1981	112.1
1982	170.3
1983	184.1
1984	245.0
1985	320.8
1986	452.2
1987	567.0
1988	623.3

1989	781.4
1990	790.5
1991	913.6
1992	1139.3
1993	1359.7
1994	1477.1
1995	1440.3
1996	1691.8
1997	2042.0
1998	2525.5
1999	2431.1
2000	2532.9
2001	2952.5

Example of Repo Transactions:

1. Deal Date: July 15, Settlement Date: July 17, Repo Term: 28 days (August 14) & Repo Rate – 4%, Collateral Rs.60,000,000 GOI 8.5% 2006 with maturity March 26, 2006 – Annual coupons (30/360) Clean Bond Price: 108.95 on July 17, Accrued interest on July 17 = 111/360*8.5 = 2.62083333 Purchase Price: Rs.108.95 + 2.62083333 = Rs.111.57083333

Purchase Consideration = 60,000,000 * (111.57083333 / 100) = Rs.66,942,500

On July 17, Buyer gives 66,942,500 and Seller delivers Rs.60,000,000 FV of Bond.

On maturity, the Seller will repay the cash with interest @ 4% = 66,942,500 * 0.04 * 28/360 = Rs.208,265.56

Repayment = Rs.67,150,765.56

On August 14, Buyer delivers Rs.60,000,000 FV of Bond and Seller gives Rs.67,150,765.56

Settlement: Same as outright deals

2. If we add Haircut 2% then the calculations would be as follows for the above example:

Dirty Price: Rs.111.57083333, Dirty Price adjustment for haircut of 2% = 111.57083333 / 1.02 = Rs.109.38316993

Purchase amount = Rs.60,000,000 * (109.38316993 / 100) = Rs.65,629,901.96.

On July 17 Buyer gives Rs.65,629,901.96 and Seller delivers Rs.60,000,000 FV of Bond, on Maturity Rs.65,629,901.96*0.04 * 28/360 =Rs.65,834,083.88 Buyer delivers Rs.60,000,000 FV of Bond and seller gives Rs.65,834,083,88.

Suppose the price of bond fell to 107.15 on July 24

The accrued interest on July 24 = 118/360* 8.5 = 2.7861111. Hence the New Dirty price Rs.109.93611111

Cash originally lent plus A.I. @4% = Rs.65,629,901.96 *(1.04*7/360) = Rs.65,680,947.44. Allowing for 2% haircut, the buyer will require that collateral is now worth Rs.65,680,947.44 * 1.02 = Rs.66,994,566.39. At new price, the FV of bond required = 66,999.566.39 / (109.93611111/100) = Rs.60,939,545.44

Seller must deliver Rs.9,40,000 FV of Bond to buyer to take care of fall in price. On July 24, Seller delivers Rs.9,40,000 FV of Bond to buyer. On August 14, Seller gives Rs.65,834,083.88 and Buyer delivers Rs.60,940,000 FV of Bond.

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