



SOCIETY OF ACTUARIES

Article from:

Risk Management

March 2014 – Issue 29

A New Normal in Equity Repo

By Anand Omprakash

THE EQUITY DERIVATIVES MARKET, on the surface, had a fairly uneventful year in 2013. In spite of concerns about the government's debt ceiling being breached and worries over potential Fed "tapering" of QE3, the VIX (the market's de facto "fear index") failed to significantly breach the 20-point handle at any point during the year. The historically low levels of volatility were largely the result of buoyancy in the equity markets, where the S&P 500 experienced its best return (30 percent) since 1997.



Anand Omprakash is director, Equity Derivatives Structuring and Strategy at Americas BNP Paribas, Global Equities and Commodity Derivatives in New York, N.Y. He can be reached at anand.omprakash@us.bnpparibas.com.

Yet, there was one aspect of the equity derivatives space that was marked by watershed changes—the Delta-One market, particularly in *equity repo*. A confluence of balance sheet and

liquidity constraints (Basel III), coupled with unusual supply/demand dynamics in equity forwards, lead to equity repo rates breaching extreme levels. In fact, equity repo rates implied from total return swap (TRS) markets and listed futures reached record highs. The most significant moves have occurred on the EuroStoxx50E (SX5E), S&P500 (SPX) and Nikkei (NKY) indices across the whole term structure (from three months to 10 years).

WHAT IS EQUITY REPO?

Before discussing the details of what happened in equity repo in 2013, it's useful to first start with a few reminders. For those familiar with repo markets outside of the equity market (particularly bond repo), it may be useful to think of equity repo in the context of secured funding rates.

In the equity derivatives world, the repo rate is defined as the spread, expressed as an annualized rate, charged over the borrowing rate to go *short*.

$$\text{FinancingCost} = \text{Interest rate} - \text{RepoRate}$$

By definition, the repo rate becomes negative when long synthetic equity financing is expensive. The interest rate benchmark is the overnight rate for daily

financing and LIBOR 3M for longer dated. Note that by this definition, the spread charged over 3M LIBOR to go long in a TRS is $-\text{RepoRate}$.

To fully understand how the repo rate fit into the delta-one market, it is useful to analyze repo in the context of forward pricing. Note that the traditional forward pricing equation, broken down into its three primary components (spot, financing cost and dividends)

$$\text{Forward} = \text{Spot} \times (1 + \text{FinancingCost} - \text{DividendRate})^T$$

reflects the fact that a forward seller can hedge his position by borrowing funds to buy the underlying security (or index).

While in derivatives textbooks the cost of financing is usually given as the risk free rate, in the real world a forward's implied financing cost can deviate from the market's risk free rate (as seen in the aforementioned equation).

If we adjust for this discrepancy, we can modify the forward price equation as follows

$$\text{Forward} = \text{Spot} \times (1 + \text{Libor} - \text{RepoRate} - \text{DividendRate})^T$$

Thus, in a sense, the repo rate, as defined above, is a correction term to the risk-free rate in the traditional forward pricing equation.

An equity forward's repo rate is heavily influenced by the fees earned from lending the underlying security in the securities lending market. The repo rate tends to be positive for specific stocks the market is looking to short (due, for example, to corporate events or bearish sentiment) and close to zero for stocks commonly owned by a large number of investors (like index components). The repo on an index is the average repo rate of the components. For SPX it used to be close to zero since most of the 500 components are not in high demand to be shorted.

When the repo rate is very negative on an index, as it currently is on major global indices (Chart 1), it reflects that demand to finance long positions in an underlying via derivatives outstrips the market's desire to provide such financing.

THE GREAT REPO DISLOCATION OF 2013—A BALANCE SHEET PHENOMENON

As noted earlier, repo rates reached historical extreme levels across the major equity indices in 2013 (Chart 1).

While different regions have some unique drivers of repo, there are several global drivers responsible for the bulk of the moves.

Arguably the most important of these drivers are the *balance sheet* constraints (Basel III) that are currently being implemented by banks. The increased capital holding rules required by these regulations have hurt the banks' collective ability to facilitate Delta-One trades. The new requirements have constrained this facilitative ability because Delta-One products (on the long side) are, ultimately, *financing* trades that allow an end user to take a long position without using the end user's balance sheet (synthetic exposure).

To see why this is the case, consider what happens when a bank facilitates a simple Delta-One product, such as an Equity Forward. If Investor X buys a 1Y forward on SPX from Bank A, and there are no other market participants willing to take a short position on the forward, Bank A must hedge the position by buying the SPX's underlying constituents and holding this position on its own balance sheet. Because the stocks now on Bank A's balance sheet are not considered risk-free assets (such as cash), from a regulatory perspective, Bank A has increased its leverage, and must *deleverage its balance sheet* elsewhere to compensate.

While the aim of regulators is for a well-capitalized banking system that can support the economy and the efficient flow of credit to consumers and companies, the initial effects of such regulations can lead to significantly disruption.

ANCILLARY REPO DISRUPTING FACTORS

In addition to the constraints on banks' balance sheets, there are several ancillary factors that contributed to the repo dislocation.

In both Europe and Japan, 2013 witnessed a marked increase in demand for upside exposure via long-dated call options, which indirectly influence the repo market

Chart 1: 1Y Repo Rates Across Major Indices



Source: BNP Paribas

(via a call option's inherent long forward exposure). The increase in demand for call options was the result of a confluence of both macro and technical drivers.

With regards to Europe, note that prior to 2013, investors had become historically underweight European equities due to the recession in peripheral countries and concerns/uncertainty stemming from the sovereign debt crisis. Additionally, SX5E long-dated call option prices reached historic lows in 2013 (as a percentage of spot) due to ultra-low bond yields (which depressed SX5E forwards), low implied volatility and rising implied dividend yields. As a result, investors, looking to position on Europe's depressed equity valuation relative to global peers, began to buy long-dated call options to position for a European equities catch-up. This demand has pressured forwards up and, consequently, put downward pressure on repo rates.

In Japan, the introduction of "Abenomics" caused significant demand for short to mid-term forwards. Japanese equities have long suffered from low price-to-book multiples and depressed returns on equity given on-going deflation and the strength of the yen—a consequence of the "lost decade." However, the implementation of Shinzo Abe's policies by the new BOJ

CONTINUED ON PAGE 22

governor, Kuroda, through an unprecedented asset purchase program, has triggered a significant rally in the USDJPY. The weaker yen has had a dramatically positive impact on earnings for Japanese companies. Consequently, foreign hedge funds and asset managers have positioned on this development by purchasing tens of billions of dollars of notional upside exposure on the Nikkei via call option structures, creating substantial demand for Nikkei forwards.

Banks, due to constrained balance sheets, were not prepared to handle this increased forward demand, and repo rates consequently fell sharply.

While we highlighted Europe and Japan specifically, due to the macro and technical drivers influencing those markets, the increased demand for forwards was, in fact, a global phenomenon, albeit expressed differently in the United States. While in the United States, the dislocation in repo rates began with the short-term futures roll at the end of 2012, long-term repo rates truly collapsed after several asset managers, looking to be long SPTR and short duration (benefit if interest rates rise), bought substantial amounts of SPTR long-term forwards at the beginning of 2013 (instead of their usual positioning via TRS). With banks unable to provide the balance sheet required of such trades, SPX repo rates plummeted to historic lows.

Outside of the supply/demand dynamics, repo rates continue to be driven by other concerns, most notably a pronounced fear of further regulations and taxes (*Financial Transaction Tax or FTT*). The current draft of the FTT, as it stands, would dramatically impair credit markets and financing costs for both banks and non-financial institutions according to many reports (e.g., ICMA/European Repo Council report). Moreover, several high ranking officials including officials at the Bundesbank have voiced concerns about the current plans.

EQUITY REPO STARTLING IN CONTEXT OF MACRO DRIVERS

The collapse of equity repo rates appears startling in

an environment of ample liquidity and unprecedented monetary easing by global central banks.

The “Hunt for Yield”¹ and collateral scarcity resulting from central bank actions (QE/LTRO), political decisions (austerity reducing EGB supply) and regulations (increasing capital requirements, CCPs, etc.) caused fixed income secured funding rates to fall. BNP Paribas rates strategists estimate a US \$2 trillion shortage of AAA/AA collateral, which is creating a “collateral squeeze.”

However, the repo dynamic witnessed in fixed-income conflicts starkly with what we have observed in the equity repo space, where the cost of funding for high quality equity has skyrocketed. In fact, some structured credit secured funding costs are now lower than those in equity: high yield, MBS and CLO collateral funding rates have fallen below equity funding rates. This is a result of the imbalance in supply and demand for quality collateral.

THE GOOD, THE BAD AND THE UGLY

The dynamic between equity repo rates varies across regions and the magnitude of the dislocation corresponds largely to 1) the degree of uncertainty; 2) concerns of market participants. Consequently, the repo markets that offer the greatest opportunity also present the most risks.

The Good: We believe that the dislocation in long-term repo (due to the imbalance in long-dated forward demand) is likely to be absorbed over time by structural forward selling flows by U.S. insurance companies (who hedge their variable annuity exposure).

The bad: The Nikkei repo rate dislocation is mostly the result of demand for short to mid-term upside exposure from global macro funds, the result of ongoing currency debasement by the Bank of Japan. Domestic investors and pension funds are still under pressure to increase their equity allocation to equities over time.

The Ugly: SX5E repo markets are facing a wide range of issues, including regulation/taxation concerns, bal-

ance sheet deleveraging and dis-intermediation. The complexity of these issues can explain the steepness of the TRS spread term structure.

IMPACT ON DELTA HEDGING PROGRAMS.

Lock-in long-term SPX repo rate: For investors who are generally short the SPX, the most straightforward way to take advantage of the dislocation is simply going short SPX via a long-term TRS to lock-in the elevated financing spread. By locking in such rates, an investor can also avoid the volatility present in short-term repo (Chart 2).

The SPX TRS is bid indicatively at 3mL + 36bps from three up to 10 years maturity.

OTC combos instead of rolling futures: While we have spent much of this piece discussing the changing dynamics of long-term repo, we note that short-term maturities have not been spared from the turmoil. As illustrated in Chart 2, short-term equity repo has been significantly volatile over the last year. We expect this elevated level volatility to persist for the foreseeable future, largely due to our aforementioned concerns, many of which remain ongoing.

The volatility in short-term repo represents a concern for a large segment of equity investors. Note that the volatility of short-term repo can make rolling long futures position through the screen difficult, especially when rolling large notional sizes. To help alleviate these potential difficulties, we suggest that investors consider using OTC combos as an alternative “synthetic long”. Combos, due to their OTC nature, often allow investors to roll larger size more easily, and oftentimes with a tighter bid/ask spread.

For those not familiar with the Combo structure, it basically entails being long an index call and short an index put of the same strike and maturity (a long combo). Note that because of the “put-call parity” concept in options pricing, a Combo effectively provides an exposure to the index forward of that maturity. To wrap up, an OTC combo provides OTC synthetic long exposure

Chart 2: SPX Short and Long-Term Repo Rates



Source: BNP Paribas

while futures provide a listed synthetic long exposure.

CONCLUSION

It’s important to realize that while distortions in equity repo market might only appear to interest funds that solely trade distorted parameters, the implications of repo market volatility stretch far beyond such “fast money” investors. Distortions in the repo parameter make their way into the pricing of virtually any derivative structure, across both Delta-One and volatility-oriented products. While ongoing regulatory uncertainty suggests that repo could continue experiencing turmoil for the foreseeable future, strategies exist to mitigate the deleterious effect of volatile repo on derivatives end-users. We hope to have shed some light on the developments in equity repo, and some ways to position in response to such developments. ■

ENDNOTES

¹ A phenomenon in which investor demand for safe yields across government and corporate bonds is generally driving the cost of funding lower.