Intraday Everywhere

Making Sense of the Latest Trend in Volatility-Controlled Indices

Executive Summary

Volatility-controlled indices featuring "intraday" data and mechanisms have become more popular as crediting options in fixed index annuities. But what are some of the details behind the marketing? We categorize intraday-based features into four categories that can help market participants better understand how these indices work and what to expect: intraday response, intraday rebalance, historical intraday models, and intraday risk premia overlays. Often used in combination, these features can help improve hedging efficiency and the potential for more index participation and better performance.

First introduced in 2020 in the annuities market, volatility control mechanisms with intraday features are quickly transitioning from cutting-edge to industry standard as carriers strive to offer competitive index crediting options. Index market leaders have become fast followers in adding intraday indices to their lineups. We estimate there are currently 23 different indices offered in fixed index annuities (FIA) products containing at least one intraday feature as of November 2023. But what exactly does “intraday” mean? Are they all the same?

Volatility-controlled indices have been popular crediting options in FIAs and structured products for well over a decade. By dynamically targeting a volatility level using frequent rebalancing, these indices are designed to stabilize day-to-day index return fluctuations. The objective is to lower and control the cost of an option linked to the index, helping increase the participation rate applied to the index returns and potentially improving the interest credited over the term.

Until recently, relatively simple historical measures taken from daily closing prices were the norm for estimating index volatility. But more advanced mechanisms introduced to the market over the last few years are starting to focus more on intraday data and processes instead of just daily closing prices.

Using more data points and/or increasing rebalancing frequency offers a greater opportunity to react to fast-moving market events, especially when sell-offs are underway and de-leveraging quickly is crucial. Increased reactivity to these market events can generally lower the cost of hedging the index, further improving index participation and potential performance versus indices only using daily data and daily rebalancing.

Intraday, De-Mystified

The various intraday features generally share a common goal of lowering the cost of hedging the index, helping to improve participation rates and performance. But the methods used to accomplish this can vary and there are some nuanced differences worth detailing.

1. Intraday Response

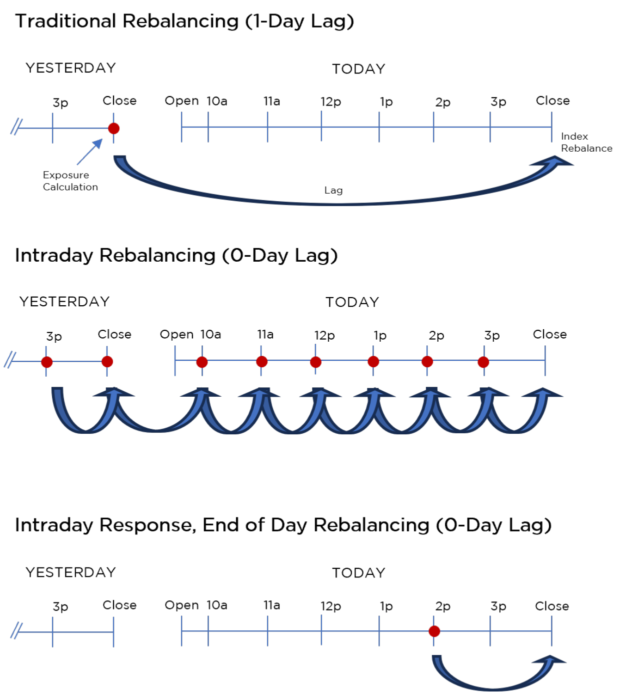
Indices that consume market data periodically or in real-time for the purpose of changing the rebalancing instructions that same day we define as *intraday response*. While most volatility-controlled indices use a one-day lag between the determination of new weights and implementation (use data as of yesterday’s closing price to update the exposures today), intraday response shrinks this to a “zero-day lag”—rebalancing the index on the same day new information is generated. This reduction in time between revising the weights and implementing changes in response helps target volatility more effectively as the most up-to-date market information is being incorporated into risk estimates.

2. Intraday Rebalance

Combined with signals via intraday response, *intraday rebalancing* uses these updated instructions to make changes to index exposures throughout the trading day. These are typically periodic rebalances that may start just after the 9:30AM NY opening of trading (for US markets) and continue at regular intervals (e.g. every hour or half-hour) until the 4PM close of trading. With intraday rebalancing, the index can react faster to market-moving information in near real-time and adjust exposure accordingly to reduce risk.

The traditional rebalancing method is to use the instructions from yesterday at the close to implement the changes only at the close of trading today (end of day rebalancing). However, some indices use new information from today but elect to implement the changes at the close like the traditional method, which can capture a good portion of the benefit of intraday rebalancing without executing multiple times throughout the day.

Figure 1: Rebalancing Methodologies

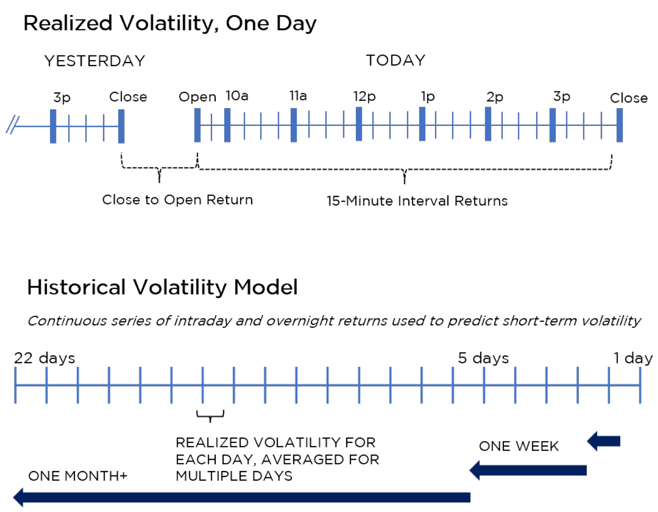


3. Historical Intraday Models

While many intraday-focused indices use some recent intraday returns over more than one day for targeting, some primarily use a historical intraday model as the basis for their volatility estimate. This approach uses the smaller moves throughout each trading day along with the return from yesterday's close to today's open, looking back historically over long stretches of time (days, weeks, months, and even longer) using all that information to form a more forward-looking forecast of very short-term volatility.

Known as a "realized volatility" model, this method captures all of the intraday moves that may occur during the trading day that can disappear when looking just at closing prices. For example, if the market sells off 1% at the open, rallies up 1% in the middle of the day, and then closes flat at the close of trading, a daily measure will capture that action as <u>zero volatility</u>. Research shows that rising intraday volatility can be a very good predictor of higher near-term day-to-day volatility, adding more importance to what happens between the opening and closing bell.[1]

Figure 2: Realized Volatility Forecast



[1] Corsi, F. (2009). A Simple Long Memory Model of Realized Volatility. The Journal of Financial Econometrics, 7, 174-196.

4. Intraday Risk Premia Overlays

While not as relevant to the volatility control mechanism, some indices use intraday risk premia overlays to add or subtract exposure during the day but return to a flat position by the close of trading. These strategies still typically have a volatility control mechanism governing a "core" equity or other asset exposure using either an intraday or end of day process to rebalance, but then layer on an "overlay" position that is removed by the close leaving just the core exposure overnight.

Most common are intraday momentum strategies, which generally initiate a long position when prices are rising intraday and a short position when prices are falling, seeking to enhance the return for the day by either adding to or hedging the core long exposure held overnight. These strategies are designed to trigger only when robust momentum signals materialize, which does not happen every day (weeks or months can go by without entering an intraday momentum trade).

FIA Indices with Intraday Features (November 2023)

Index	Ticker	Live Date	Carrier	Intraday Response	Intraday Rebalance	Historical Intraday	Intraday Risk Premia
Nasdaq FC	BOFANFCC	1/29/2020	Athene				
CS Tech Edge	CSEATEDG	1/14/2021	American Equity				
CS truVol US Target Sectors	CSEATVUS	3/19/2021	Brighthouse				
Citi Risk Balanced 5% Net	CIISRB5N	9/9/2021	Kuvare				
Goldman Sachs Xenith	GSXENITH	12/8/2021	American Life				
Goldman Sachs New Horizons	GSNHRZON	3/2/2022	Nationwide				
Morgan Stanley Dynamic Global	MSUSMSDG	3/17/2022	Sammons				
Morgan Stanley Dynamic US Equities	MSUSMSDE	5/31/2022	Investor's Heritage				
Nasdaq Generations 5	NDXGEN5	8/11/2022	SILAC				
BofA U.S. Strength Fast Convergence	BOFARFCC	8/22/2022	Ibexis				
Dimensional US Foundations	DFAUSFDS	9/30/2022	Corebridge				
Morgan Stanley Global Equity Allocator	MSUSMSGE	10/12/2022	Security Benefit				
Goldman Sachs Grand Prix	GSGRNDPX	10/28/2022	Aspida				
UBS Multi-Asset Inflation Aware	UBSMAIA5	11/1/2022	Security Benefit				
UBS Multi Asset Strategy Tactical Rotation	UBSMASTR	12/15/2022	Kuvare				
S&P 500 Duo Swift Uncapped	SPDUWE	3/6/2023	SILAC				
Barclays Transitions 6%	BXIITR6E	3/31/2023	Sammons				
Barclays Transitions 12%	BXIITR12	3/31/2023	Sammons				
BofA Global MegaTrends	BOFAMEG7	4/17/2023	The Standard				
Barclays US Tech 12%	BXIITE12	4/19/2023	GCU				
S&P 500 FC TCA 0.5% Decrement Index ER	SPXFCDUE	6/23/2023	Athene				
S&P 500 IQ 0.5% Decrement Index	SPFEVCID	7/12/2023	Americo				
Nasdaq-100 Volatility Control 7% Index	XNDX7E	7/31/2023	Farmer's Life				

Source: Company websites, Salt Financial. All information is believed to be accurate based on publicly-available documentation and marketing materials but certain non-disclosed aspects may be inferred.

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Eleven of these have some form of intraday response, using the most current market data from today to make changes to the index. Nine of the intraday response indices are paired with intraday rebalancing, including three using Bank of America's Fast Convergence technology. The remaining two use the same-day information to make changes to the index at the close of trading. There is a trade-off between the faster response from rebalancing throughout the day and the ease of rebalancing at the close when market liquidity tends to be highest.

Just under half of these indices (10) primarily use Historical Intraday in the mechanism. Seven of them use Salt Financial's truVol® Risk Control Engine (RCE) currently licensed to six investment banks and the other three are Barclays indices using a proprietary mechanism. The truVol technology uses 15-minute historical intraday returns whereas the Barclays' mechanism appears to use the daily range (open, high, low, and close prices for each) for its primary intraday-based measure.[2]

Lastly, six use some form of intraday risk premia overlay, with either a traditional or intraday-based method for the core volatility targeting mechanism.

The Future of Intraday Indices

Adoption of intraday features in index development has accelerated over the last three years with many more indices likely in various stages of development soon to hit the market. Insurance carriers and distributors are starting to actively seek out intraday indices as they understand the benefits and look for a performance advantage over their peers.

The volatility control mechanism is similar to the brakes on a car, improving over time with advances in technology. Anti-lock brakes (ABS) designed to prevent skidding and loss of traction were adapted from systems developed decades earlier to help airplanes stop on slick runways. The technology was introduced in cars in the early 1970s, mostly as a premium feature in certain models of Cadillac. But by the 1990s, nearly all cars sold in the United States came with ABS as a standard feature, which consumers came to expect.

There are currently no indices placed with a carrier that have all four of the intraday features we categorized above. But we expect this to change. And just like ABS technology continued to evolve long since becoming standard equipment, we expect further innovation using intraday data in designing risk-focused solutions for annuitants and investors in the years to come.

[2] The index brochure for the Barclays Transition indices references a paper detailing the Yang-Zhang volatility estimator that uses open/high/low/close data, "Drift Independent Volatility Estimation Based on High, Low, Open and Close Prices" by D.Yang and Q.Zhang (Journal of Business, 2000) https://www.jstor.org/stable/10.1086/209650.

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