What are Zero-day options?

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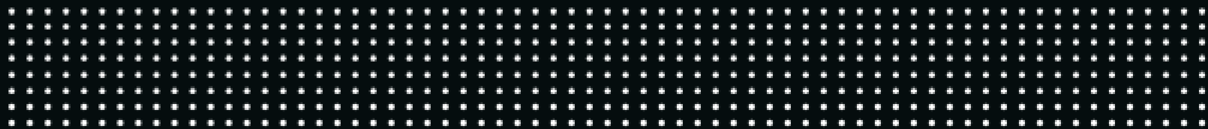
Zero Days to Expiration (0DTE) are options that expire on the same day they are purchased.

First, let's take a step back and define options, which are derivative contracts that give buyers the right, but not the obligation, to buy or sell an underlying asset at an agreed-upon price and date. Call options and put options form the basis for a wide range of option strategies designed for hedging, income, or speculation.



Now what's different is that Zero-day options expire within 24 hours, thereby giving an investor a small window of time to decide on exercising the option.

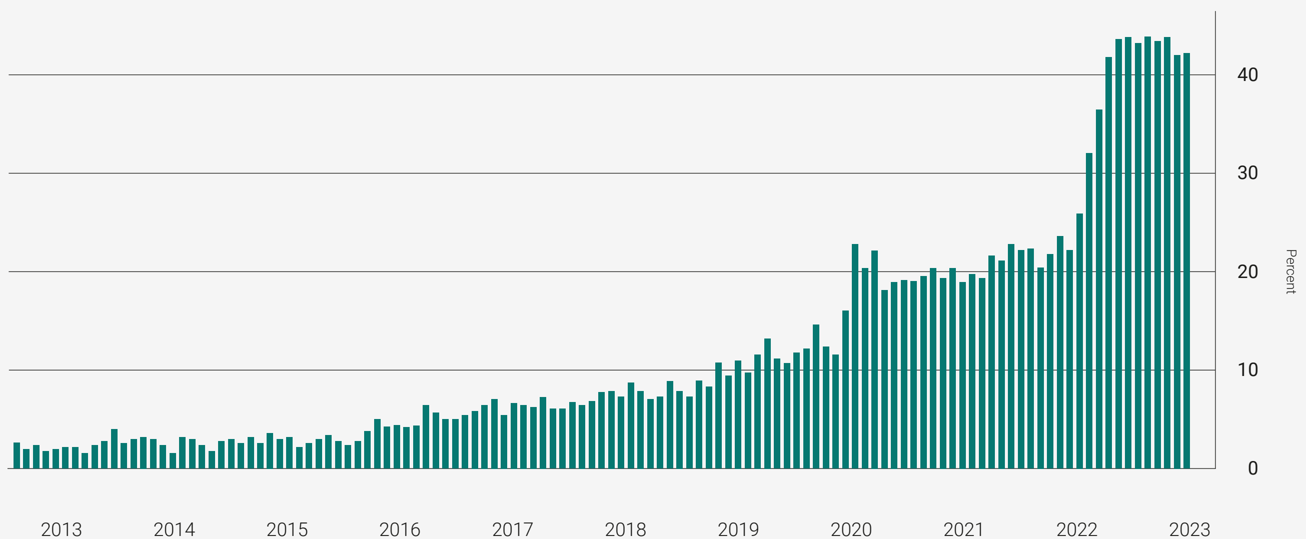
Historically, back in 2005 the CBOE introduced weekly options, allowing investors to trade 0DTE once a week. Shortly after, Monday and Wednesday options were added. Then in 2022, 0DTE options on the SPX and SPDR S&P 500 ETF Trust (SP) were added for all five trading days. These unique option contracts became popular by retail investors as a convenient way of speculating during what became known as the meme-stock craze in 2021. What was appealing to retail investors was the ability to make big stock market bets with little money down, something akin to a lottery ticket. Additionally, this strategy has no overnight margin risk since the options are "self-liquidating". However, the strategy for these options among institutional investors provided portfolio managers with a mechanism to hedge short-term risk. Meanwhile, some hedge funds have been using these options in an attempt to move the benchmarks, or to bet on large moves in individual stocks or sectors ahead of earnings announcements or other catalysts.

Zero-day options for example can be tied to the S&P 500 index. According to a report issued by Bank of America, more than 40% of S&P 500 options volume comes from Zero-day options. Meanwhile, according to JPMorgan research roughly $1 trillion worth of Zero-day options are bought daily.

0DTE trading tends to amplify price moves in both directions.

TRADING OF ZERO-DAY OPTIONS EXPLODES

S&P 500 0DTE contracts make up more than 40% of total volume



Source: Bank of America

How are Zero-day options priced?

The price of a Zero-day options is based solely on the intrinsic value of the option, which is the difference between the strike price and the current price of the underlying asset, otherwise called "binary" options. For example, if the current price of a stock is $100 and the strike price of a call option is $90, the intrinsic value of the option is $10. The price of the Zero-day options will generally be very close to the intrinsic value, as there is no time left for extrinsic or time value to be added.

The hedge ratio (i.e. how much of the underlying security one has to buy or sell) flips changes massively at the strike. This means that there is enormous (essentially infinite) gamma in the option at the strike, since the delta of the option can change from 0 to 100% for a miniscule move in the price of the underlying security.

High-Risk, High-Reward

While Zero-day options can offer potentially high returns in a brief time span, they also come with significant risks and challenges that traders need to be aware of. It's important to consider that Zero-day options can expose traders to unlimited losses if they sell options without owning the underlying asset or another offsetting option, as the seller has an obligation to deliver or buy the underlying asset at the strike price if the buyer exercises the option.

As an investor in Zero-day options, it is important to consider that these options require constant monitoring and quick, real-time decision-making, as the price and value can change rapidly and unpredictably throughout the day.

Note that Zero-day options are highly liquid, with a high trading volume and tight bid-ask spreads. This makes it relatively easier for traders to enter and exit positions quickly and at a favorable price. Since Zero-day options are available every day, traders have more flexibility in their trading strategies by taking advantage of short-term price movements, reacting quickly to news events, or by adjusting their positions based on changing market conditions.

Mom and Pop Investors

At the beginning of the meme-stock era in 2021, zero-day options were embraced as an economical way to gamble by retail investors as they became mainstream. Even though the current frenzy has been primarily fueled by professional traders, the allure of high risk, high reward potential coupled with the potential for a quick return has appealed to many amateur investors as well.

However, the surge in Zero-day options trading has expanded the ways retail investors have been losing money since options trading grew in popularity. A recent study released in March by the University of Münster estimated losses for retail traders totaling $358,000 a day.

Not Just Retail Any Longer

Based on JPM's retail classification algorithm, in November 2020, around 5.6% of all market volume on 0DTE options was attributable to retail market orders. According to JPMorgan quant Peng Cheng, it is tempting to overestimate the retail activity in 0DTE options, given one observes a large number of small trades in 0DTE options. However, due to the proliferation of algo trading, trade size is no longer a good classifier for retail vs. institutional.

High Frequency Traders

Another factor behind the explosive rise are high-frequency traders, the computer-driven firms that use quant models to make their investment bets. These firms operate on systems designed to measure trading in a fraction of a second and can leverage zero-day options to balance exposure, manage risk, and seek profits by rapid trading techniques.

0DTE Forces Changes to the VIX

The Volatility Index, or commonly referred to as the VIX which measures volatility in the stock market, uses S&P500 options contracts with more than 23 days and less than 37 days left to maturity. So, none of the 0DTE options trading impacts VIX. Enter the one-day VIX. In late April, the CBOE launched a One-Day VIX that gives market watchers a much fuller picture of risks in the equity market.

Conclusion

Wall Street continues to debate the merits and risks tied to Zero-day options. JPMorgan strategist Marko Kolanovic said earlier this year that the popularity of these trades could potentially result in "Volmageddon 2.0," an amalgamation of volatility and Armageddon, referring to the spike in such short-term options trades in February 2018 which caused the S&P to drop 4%. Nomura cross-asset strategist Charlie McElligott noted that 0DTE options add yet another layer of noise to intraday markets.

From another perspective, experienced options traders have found significant value in trading Zero-day options due to their massive return potential, high liquidity, and flexibility. Additionally, Brent Kochuba, founder of SpotGamma added, "Where 0DTE is currently most impactful is where it seems 0DTE calls are being used to 'buy the dips' after large declines. In a way this suppresses volatility."

Meanwhile, US derivatives regulators are examining the impact on markets of short-dated options contracts after Wall Street warnings of an explosive trend that may be impacting volatile swings in stock prices.