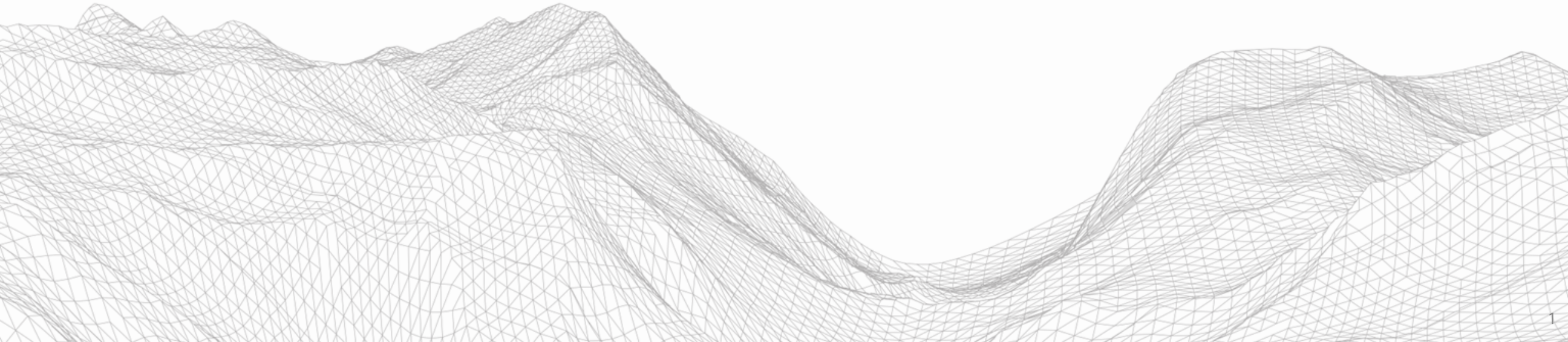
WEBINAR

ETF Trading: Thin Volumes, Deep Liquidity

Why average daily volume tells advisers almost nothing about trading costs



Standardized Returns as of 9/30/2026

			1 Yr.		Annualized 3 Yr. Total Return		Annualized 5 Yr. Total Return		Annualized 10 Yr. Total Return		Annualized Return Since Inception		Expense Ratios	
Name	**Ticker**	**Inception Date**	**NAV**	**Mkt.**	**NAV**	**Mkt.**	**NAV**	**Mkt.**	**NAV**	**Mkt.**	**NAV**	**Mkt.**	**Gross**	**Net**
US Equity	AAUS	7/22/2025	14.49%	14.58%	--	--	--	--	--	--	19.46%	19.56%	0.09%	0.09%

The performance data quoted represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than the performance quoted. For performance data current to the most recent month end, please call 215.882.9983 or visit funds.alphaarchitect.com/aaus.

Source: Alpha Architect, YCharts. **Investing involves risk, including the loss of principal. Past performance does not guarantee future results.** Returns are annualized total returns, except for those periods of less than one year, which are cumulative. Market price returns are based upon the closing composite market price and do not represent the returns you would receive if you traded shares at other times. A fund's NAV is the sum of all assets less any liabilities, divided by the number of shares outstanding.

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TOPICS COVERED

1) ETF liquidity and market making overview
2) What does the academic research say?
3) What this means for advisers

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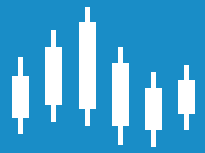
Stock liquidity is straightforward...

Why pricing is a function of elasticity in stock supply.



Low Trading Volume

Stocks that garner less attention tend to trade less often.



Low Liquidity

*Because **stock supply is fixed**, low volumes tend to lead to illiquidity.*



Wide Spreads

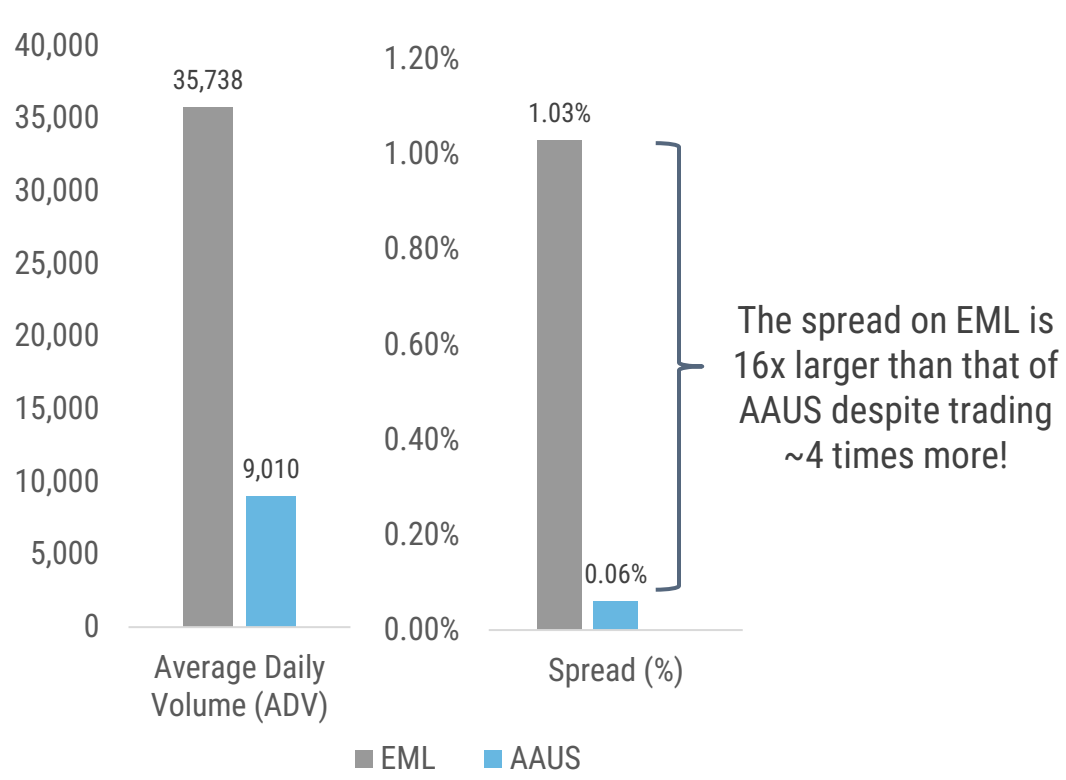
Illiquidity is reflected in wide bid-ask spreads[1].

[1]**Bid-ask spread** is the gap between the highest price a buyer is willing to pay and the lowest price a seller is willing to sell. Wider spreads signal less liquidity. For illustrative purposes only.

...But that intuition does not translate to ETFs

ETFs can have low volumes but relatively tighter spreads.

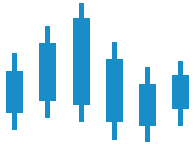
Asset	Ticker	Average Daily Volume (ADV)	Bid-Ask Spread	Midpoint Price	Spread % (Spread/Midpoint)



The spread on EML is 16x larger than that of AAUS despite trading ~4 times more!

Source: Nasdaq.com. As of 8/10/2026, at approximately 1:45PM. [1]EML is an American micro-cap engineering and manufacturing company specializing in industrial hardware and security products. References to specific securities are for illustrative purposes only. Holdings are subject to change and should not be considered investment advice. For AAUS current holdings visit funds.alphaarchitect.com/aaus.

If ADV is not the driving force behind ETF liquidity, then what is it?



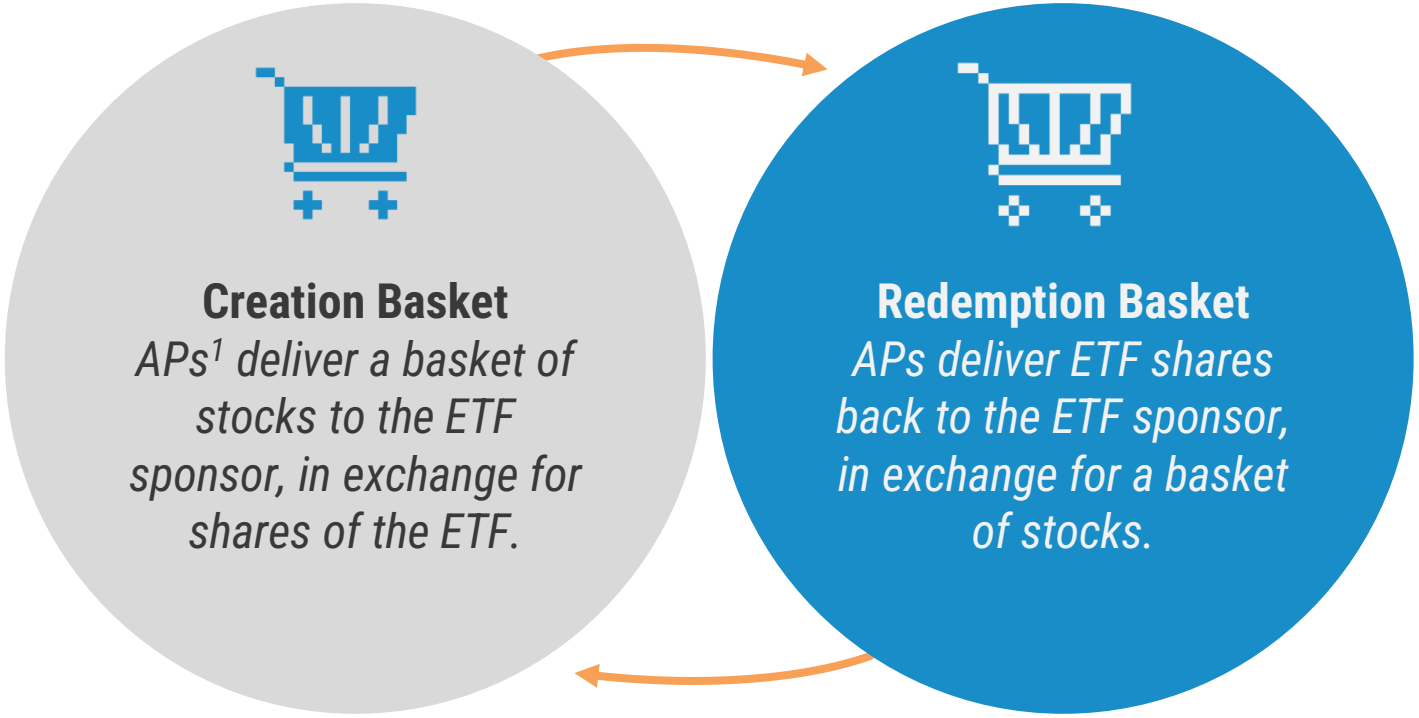
For illustrative purposes only.

ETFs don't play by the same rules!

The ETF creation and redemption process helps authorized participants provide liquidity in the secondary market.

Every ETF is simply a basket of securities

- Authorized participants engage in a creation/redemption process to deliver ETFs in the secondary market.
- *Because supply in the primary market is essentially unlimited, an ETF's trading volume plays little role in determining its liquidity.*



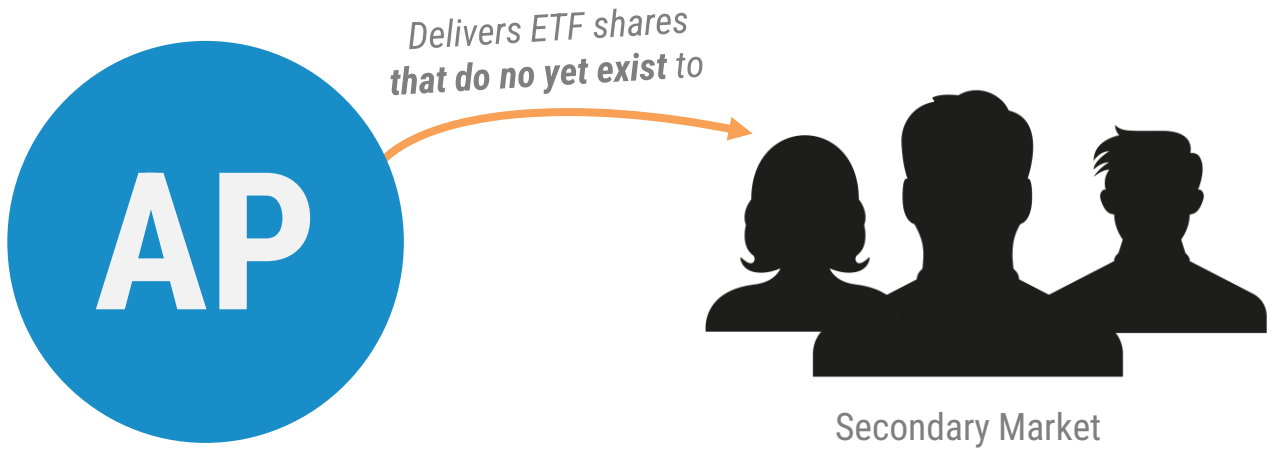
For illustrative purposes only. [1]**Authorized Participants** (AP's) are the large financial institutions – typically broker-dealers – contractually permitted to create and redeem ETF shares directly with the fund in large blocks called creation units, an arbitrage mechanism that keeps the ETF's market price closely aligned with the value of its underlying holdings.

“I heard the AP’s short ETFs. What’s up with that?”

Not all shorting is the same | How market makers can short ETFs to provide liquidity.

The creation/redemption process affords APs a unique and crucial market-making mechanism for providing ETF liquidity known as operational shorting

- APs can sell shares that they do not own to meet immediate liquidity demands in the secondary market.
- This allows APs to satisfy buyer demand without immediately creating and delivering those shares, but they must cover their short positions soon after.
- This is fundamentally different from directional shorting which seeks to gain from down moves in a security.



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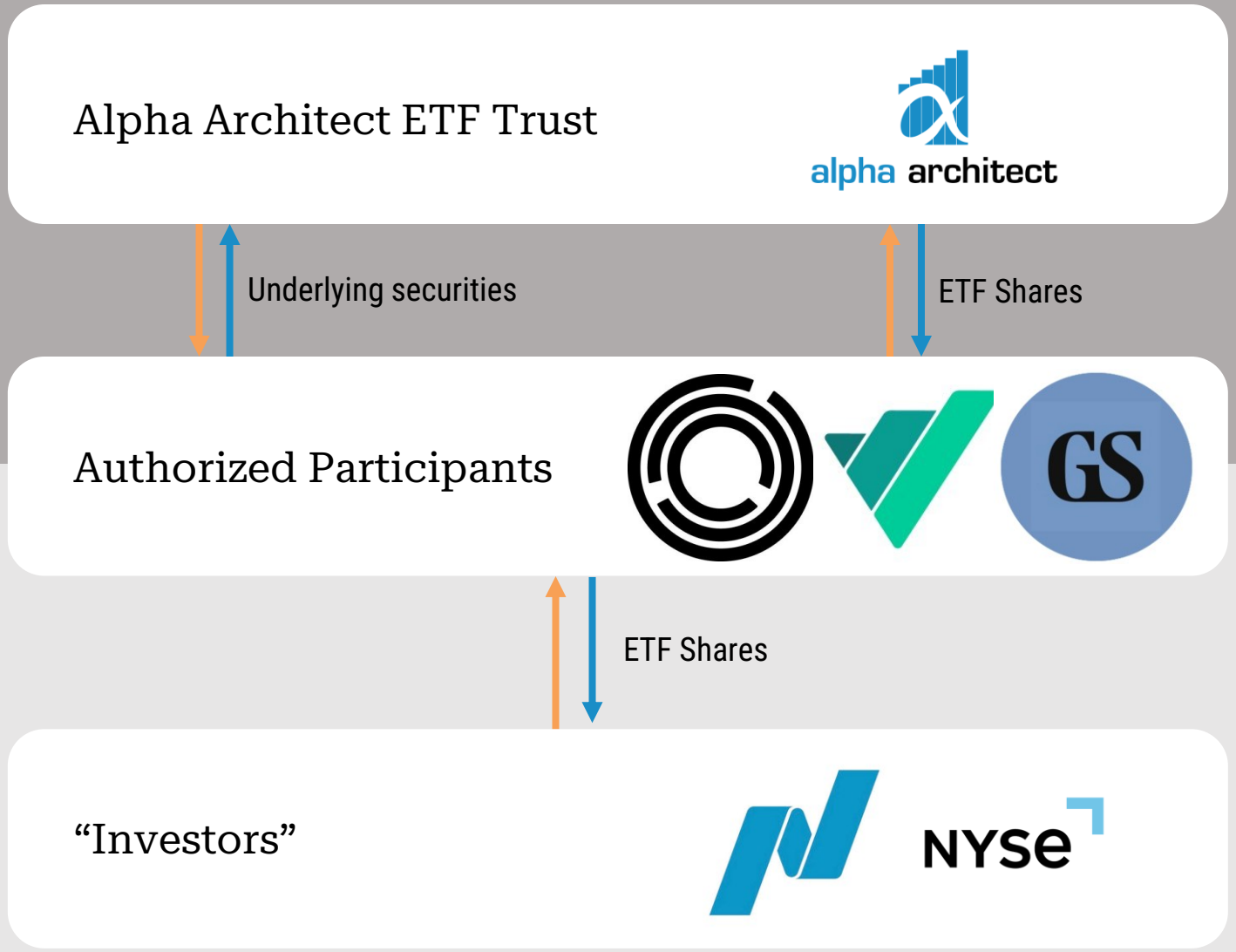
Primary Market



Secondary Market

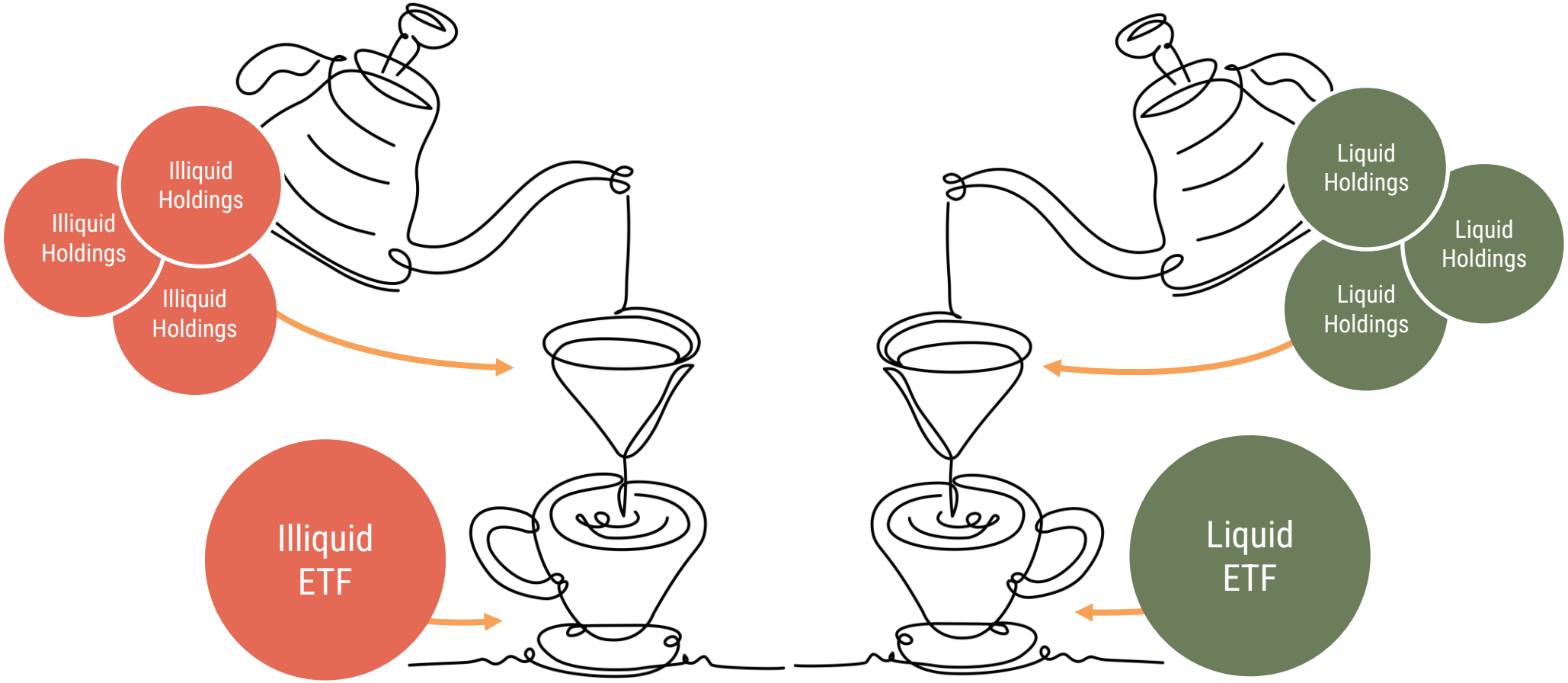
For illustrative purposes only.

But what actually determines the liquidity of an ETF?



For illustrative purposes only.

An ETF's liquidity is mainly driven by its holdings!



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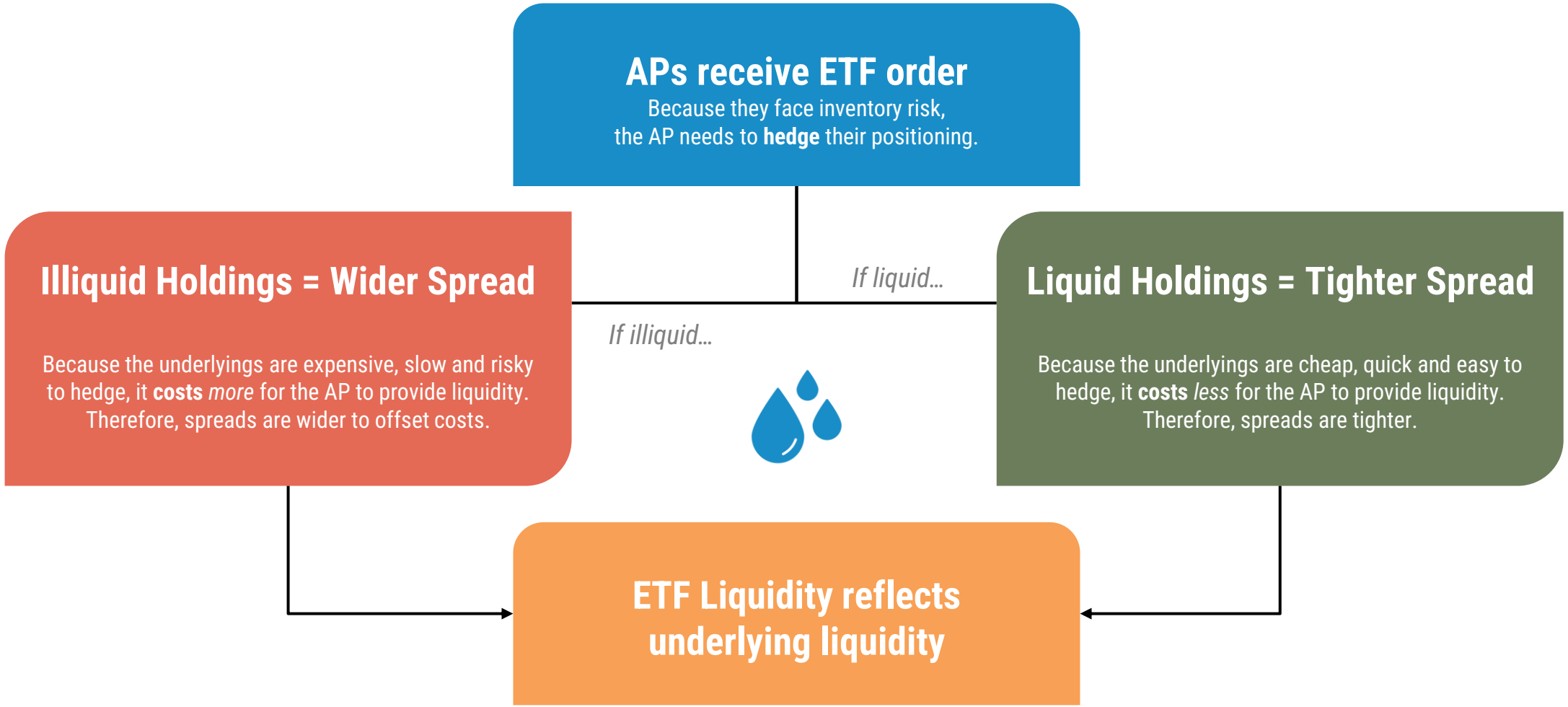

For illustrative purposes only.

What's in it for market makers?

Market makers can profit by providing liquidity in the secondary market.



using

Arbitrage[1]

By tracking intraday NAV[2] *and market price market makers can "arb" the difference.*

doing this provides

Liquidity

The process keeps market prices close to NAV in most market environments.

For illustrative purposes only. [1]**Arbitrage** is the practice of simultaneously buying and selling the same or economically equivalent asset in different markets or forms to profit from a price discrepancy, ideally without taking on net risk or committing capital. [2]**NAV (net asset value)** is the per-share value of a fund's holdings, calculated as total assets minus total liabilities divided by shares outstanding.

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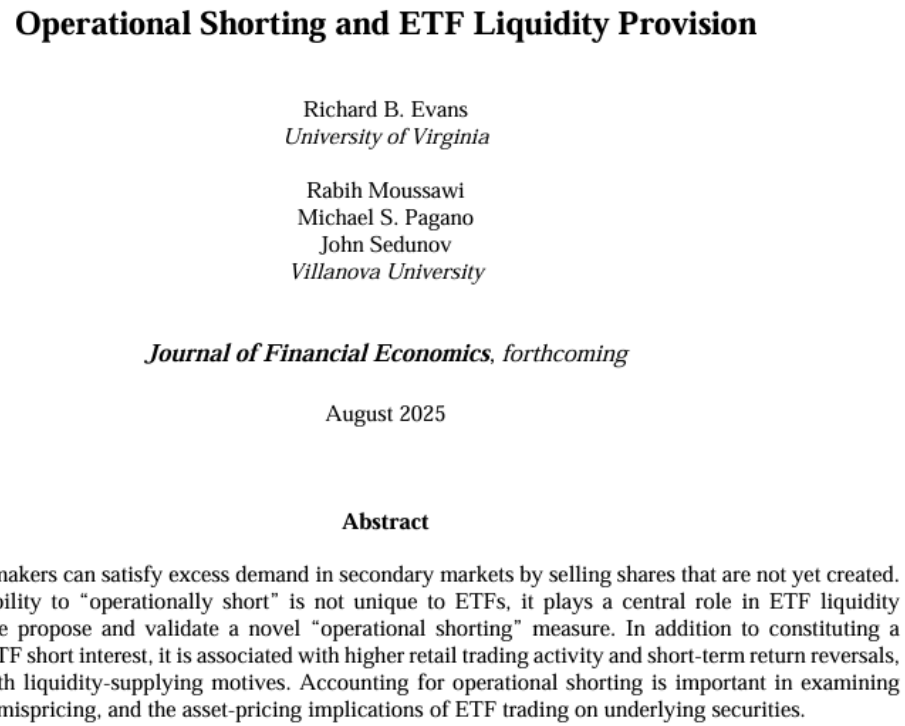
Operational shorting is essential to ETF liquidity…



Operational Shorting and ETF Liquidity Provision

Richard B. Evans
University of Virginia

Rabih Moussawi
Michael S. Pagano
John Sedunov
Villanova University

***Journal of Financial Economics**, forthcoming*

August 2025

Abstract

ETF market makers can satisfy excess demand in secondary markets by selling shares that are not yet created. While this ability to "operationally short" is not unique to ETFs, it plays a central role in ETF liquidity provision. We propose and validate a novel "operational shorting" measure. In addition to constituting a majority of ETF short interest, it is associated with higher retail trading activity and short-term return reversals, consistent with liquidity-supplying motives. Accounting for operational shorting is important in examining ETF returns, mispricing, and the asset-pricing implications of ETF trading on underlying securities.

*" We find that operational shorting represents approximately **two-thirds** (64%) of the overall ETF short interest activity during our sample period, suggesting a **central role** in **ETF liquidity provision**."*

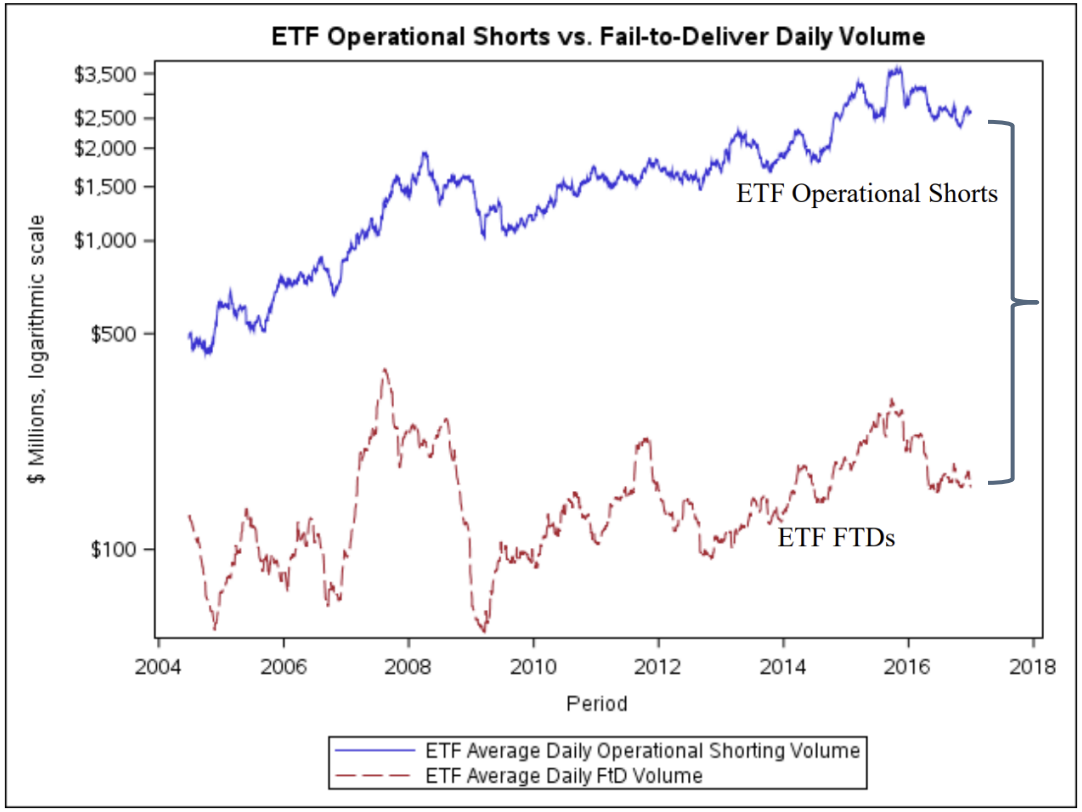
Evans, R. B., Moussawi, R., Pagano, M. S., & Sedunov, J. (2025). Operational shorting and ETF liquidity provision. Journal of Financial Economics, forthcoming.

...But it has raised some eyebrows



*"the average dollar value of ETF-related FTDs [failure-to-deliver[1]] now represents **78.5%** of all FTDs."*

Figure 1 – Operational Shorting and Failure-to-Deliver (FTD) Activity of ETFs: This figure displays the rolling-average daily dollar value of Operational Shorting activity and FTDs for ETFs from March 22, 2004 – December 31, 2016.



ETF operational shorts and failure-to-delivers are highly correlated!

Hmmm...

Source: Evans, R. B., Moussawi, R., Pagano, M. S., & Sedunov, J. (2025). Operational shorting and ETF liquidity provision. Journal of Financial Economics, forthcoming. [1]**Failure-to-deliver** occurs when the seller in a securities transaction doesn't deliver the shares to the buyer by settlement date, leaving an unsettled obligation open at the clearing agency.

...But it has raised some eyebrows

Response to SEC Questions Regarding Exchange Traded Products
File Number S7-11-15

Short selling is extreme in many ETFs. The lending markets are not being properly utilized to accommodate the selling, causing systemic risk from undisclosed leverage in the financial system (more shares sold than exist) for the benefit of very few while creating risks for all stakeholders, including taxpayers. There appears to be fictitious liquidity caused by extensive washed/matched type trading along with spoofing activity that is distorting market prices and the appearance of supply and demand.

Is this just abusive naked short selling?

Source: SEC. https://www.sec.gov/comments/s7-11-15/s71115-19.pdf

The academics say… no!



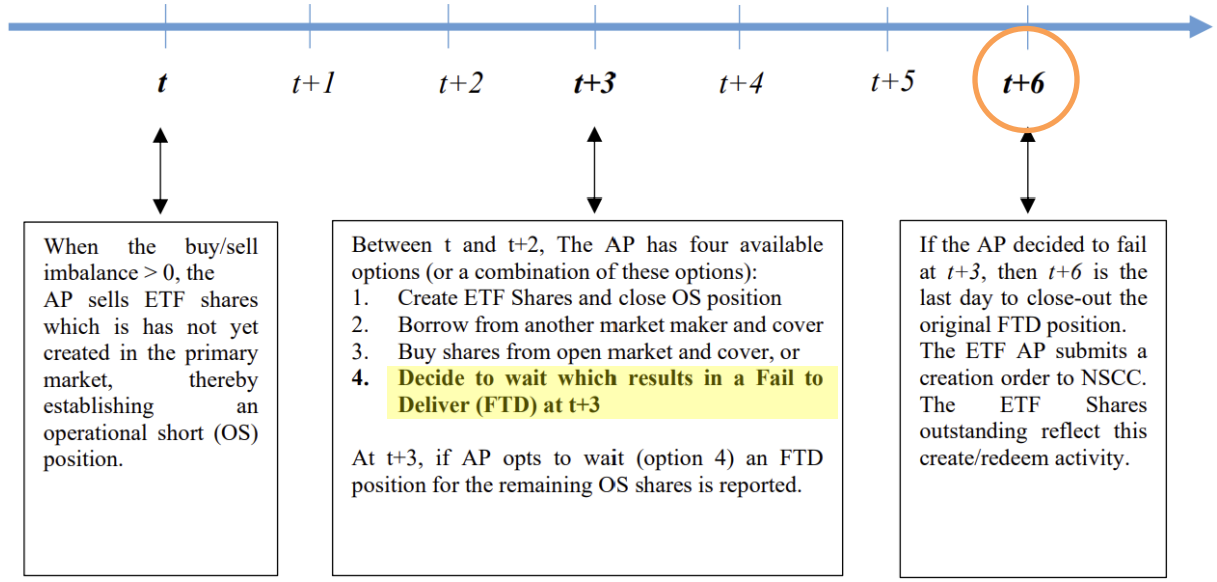
For illustrative purposes only.

Operational shorting is essential to liquidity

High levels of ETF short selling are a direct result of market makers' ability to provide liquidity in the market.

- Operational shorting must be non-directional and mostly hedged for market makers to be able to profit.
- Increases with rises in retail demand among investors, as market price is pushed to a premium.
- Most prevalent when a "liquidity mismatch" exists. Assembling illiquid baskets is slow and expensive; option to wait is valuable.
- Due to the importance of operational shorting in market efficiency and liquidity provision, according to SEC Rule 204, **market makers can delay delivery of ETF shares three days beyond standard clearing times.**

Figure A.1 – ETF Settlement Failure Timeline: This figure displays the key events during a settlement failure for an ETF. Time t represents the time when an operational short is established. Dates $t+i$, where i is between 1 and 6, represent i days after the operational short position is established.



Source: Evans, R. B., Moussawi, R., Pagano, M. S., & Sedunov, J. (2025). Operational shorting and ETF liquidity provision. Journal of Financial Economics, forthcoming.

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“I see that your past 351 funds trade very little.

Does that mean the funds are illiquid?”

For illustrative purposes only.

Our funds can be highly liquid and tradeable!

AAUS vs. the top 50 largest US large blend[1] ETFs.

Liquidity of the largest US Large Blend equity ETFs

	Average allocation to **Top-25 Holdings**	30-day ADV **ETF**	30-day ADV **Underlying holdings (top 25)**
ETFs #1-10	*45.3%*	*21,449,804*	*26,074,309*
ETFs #11-20	*59.6%*	*2,802,390*	*21,905,777*
ETFs #21-30	*56.5%*	*1,509,890*	*22,764,703*
ETFs #31-40	*57.3%*	*633,188*	*21,153,599*
ETFs #41-50	*49.4%*	*237,714*	*26,241,222*
Avg. (all 50)	53.6%	5,326,597	23,627,922
AAUS	59.1%	2,199	27,248,141

AAUS may trade less than its peers…

…but the liquidity of the underlying holdings is similar!

Source: YCharts, Alpha Architect. 30-day ADV is the average number of shares (or dollars) traded per day over the past 30 trading days. It is a common way to measure liquidity or volume of an exchange-traded security. Data as of 4/14/2026.
[1]**US Large Blend** is represented by a category average derived by Alpha Architect from categories determined by YCharts. See definitions for category average methodology and construction. Comparisons to category averages are inherently limited and may differ materially from a particular investment in its objectives, strategies, risks, liquidity, volatility, expenses, and return characteristics. The correlation between a particular investment and a category average may change over time. Category averages are not available for direct investment.

Our funds can be highly liquid and tradeable!

AAUS historically enjoyed a relatively tight bid-ask spread.

Asset	Ticker	Average Daily Volume (ADV)	Bid-Ask Spread	Midpoint Price	Spread % (Spread/Midpoint)
Alpha Architect US Equity ETF	AAUS	9,010	$0.04	$61.97	**0.06%**



Just 4 cents on a $61.97 ETF!

Source: Nasdaq.com. As of 8/10/2026, at approximately 1:45PM.

“Does that mean that I can put in a market order at any time?”

For illustrative purposes only.

Yes. But! Market orders can be risky.

Market orders can move market prices away from NAV in any ETF.

Although an AP could fill an order regardless of whether it is a market or limit order, market orders can move price away from NAV[1].

- An ETF is a derivative instrument, and sometimes supply and demand can push market prices excessively far from NAV.
- Placing a market order when such deviations occur can cost investors significant money.
- Even the largest and most frequently traded ETFs are not safe from such price swings… on June 26, 2026, both **SPY** and **VOO**, two of the largest S&P 500[2] ETFs, **traded at nearly a 50bp[3] discount to NAV[1]**!



Source: Blackrock, Vanguard. [1]**NAV (net asset value)** is the per-share value of a fund's holdings, calculated as total assets minus total liabilities divided by shares outstanding. [2]**S&P 500** is a market-capitalization-weighted index that tracks the performance of 500 large-cap U.S. companies, representing roughly 80% of the total U.S. equity market. Companies are selected by a committee based on criteria including size, liquidity, and industry representation. The Index returns are gross of fees. [3]**Basis point (bp)** is one hundredth of a percent, or 0.01%. **Premium** refers to ETF pricing trading above NAV. **Discount** refers to ETF pricing trading below NAV. References to third party funds are for informational purposes only and do not constitute a recommendation, solicitation, or endorsement. For informational purposes only. Not meant to represent the Fund.

Key Takeaways

1. Trading volume is a poor proxy for ETF liquidity. Underlying holdings have a greater influence in determining bid-ask spreads.
2. The creation/redemption process helps keep market prices reasonably close to NAV.
3. Using limit orders can help prevent getting filled at a price significantly different from NAV.

The Alpha Architect portfolio team

Our team combines strong academic credentials with years of practical experience.



Wesley Gray, Ph.D.

CEO, co-CIO, Portfolio Manager

- Ph.D. in Finance from University of Chicago; studied under Eugene Fama
- Served as a Captain in the US Marine Corps as Special Envoy to Iraqi Army
- Founded Alpha Architect in 2010



Jack Vogel, Ph.D.

CFO, co-CIO, Portfolio Manager

- Ph.D. in Finance and Masters in Mathematics from Drexel University
- Research published in multiple academic journals; co-authored three books
- Joined Alpha Architect in 2010



Josh Russell, Ph.D., CFA

Head of Trading

- Ph.D. in Electrical and Computer Engineering from UC – Santa Barbara
- Conducted research for NASA, the Army, and the Air Force
- Former Equity PM at Carson Group

Ready to learn more?

Whether you have a few follow-up questions or want to discuss a strategy in depth, a call with our team is often the fastest way to get answers.

Book a Meeting

Book a meeting with our team.

Register for a Webinar

Register for a LIVE Webinar to stay ahead on the latest ETF news and research.

Sign-up for Emails

Sign-up to receive emails from the team that fit your business needs.

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PROSPECTUS OFFER

Investors should carefully consider the investment objectives, risk, charges, and expenses of the funds. This and other important information is in the indicated fund's prospectus, which can be obtained by calling (215) 882-9983 or by visiting www.funds.alphaarchitect.com/aaus. The prospectus should be read carefully before investing.

PRINCIPAL INVESTMENT RISKS

Large-Capitalization Companies Risk. Large-capitalization companies may be less able than smaller capitalization companies to adapt to changing market conditions. Large capitalization companies may be more mature and subject to more limited growth potential compared with smaller capitalization companies. During different market cycles, the performance of large-capitalization companies has trailed the overall performance of the broader securities markets.

Mid-Capitalization Companies Risk. Investing in securities of mid-capitalization companies involves greater risk than customarily is associated with investing in larger, more established companies. These companies' securities may be more volatile and less liquid than those of more established companies. Often mid-capitalization companies and the industries in which they focus are still evolving and, as a result, they may be more sensitive to changing market conditions.

Small-Capitalization Companies Risk. The securities of small-capitalization companies may be more vulnerable to adverse issuer, market, political, or economic developments than securities of large- or mid-capitalization companies. The securities of small-capitalization companies generally trade in lower volumes and, during adverse circumstances, may be more difficult to sell and receive a sales price comparable to the value assigned to the security by the Fund. These securities are subject to greater and more unpredictable price changes than large- or mid-capitalization stocks or the stock market as a whole. There is typically less publicly available information concerning smaller-capitalization companies than for larger, more established companies, which may make the valuation of such securities more difficult if there is not a readily available market price.

Risk of Investing in the United States. Certain changes in the U.S. economy, such as when the U.S. economy weakens or when its financial markets decline, may have an adverse effect on the securities to which the Fund has exposure.

Investment Risk. When you sell your Shares, they could be worth less than what you paid for them. The Fund could lose money due to short-term market movements and over longer periods during market downturns. Securities may decline in value due to factors affecting securities markets generally or particular asset classes or industries represented in the markets. The value of a security may decline due to general market conditions, economic trends, or events that are not specifically related to the issuer of the security or to factors that affect a particular industry or group of industries. During a general downturn in the securities markets, multiple asset classes may be negatively affected. Therefore, you may lose money by investing in the Fund.

Investment Strategy Risk. There is no guarantee that the Fund will be able to successfully minimize the taxable income generated by an investment in Fund Shares.

Non-Diversification Risk. Because the Fund is non-diversified, it may be more sensitive to economic, business, political or other changes affecting individual issuers or investments than a diversified fund, which may result in greater fluctuation in the value of the Shares and greater risk of loss.

High Portfolio Turnover Risk. The Fund's investment strategy is expected to result in higher turnover rates. This may increase the Fund's brokerage commission costs, which could negatively impact the performance of the Fund. Rapid portfolio turnover may expose shareholders to a higher current realization of short-term capital gains, distributions of which would generally be taxed to you as ordinary income and thus cause you to pay higher taxes. In order to effectuate the Fund's strategy, the Sub-Adviser is relying upon the ability to conduct in-kind redemptions of the Fund's portfolio holdings. In the event that the Sub-Adviser is unable to do so, the ability of the Sub-Adviser to minimize the taxable income generated by an investment in Fund Shares will be impaired.

Equity Investing Risk. An investment in the Fund involves risks similar to those of investing in any fund holding equity securities, such as market fluctuations, changes in interest rates, and perceived trends in stock prices. The values of equity securities could decline generally or could underperform other investments. In addition, securities may decline in value due to factors affecting a specific issuer, market, or securities markets generally.

Investment Company Risk. An investment in other registered investment companies (including other ETFs, affiliated and non-affiliated) is subject to the risks associated with those investment companies, which include, but are not limited to, the risk that such fund's investment strategy may not produce the intended results; the risk that securities in such fund may underperform in comparison to the general securities markets or other asset classes; and the risk that the fund will be concentrated in a particular issuer, market, industry, or sector, and therefore will be especially susceptible to loss due to adverse occurrences affecting that issuer, market, industry, or sector. Moreover, the Fund will incur duplicative expenses from such investments, bearing its share of that fund's expenses while also paying its own advisory fees and trading costs. Investments in ETFs are also subject to the "ETF Risks" described below.

PRINCIPAL INVESTMENT RISKS (cont'd)

ETF Risks.
Authorized Participants, Market Makers and Liquidity Providers Concentration Risk. The Fund has a limited number of financial institutions that may act as Authorized Participants ("APs"). In addition, there may be a limited number of market makers and/or liquidity providers in the marketplace. To the extent either of the following events occur, Shares may trade at a material discount to NAV and possibly face delisting: (i) APs exit the business or otherwise become unable to process creation and/or redemption orders and no other APs step forward to perform these services, or (ii) market makers and/or liquidity providers exit the business or significantly reduce their business activities and no other entities step forward to perform their functions.
Premium-Discount Risk. The Shares may trade above or below their net asset value ("NAV"). The market prices of Shares will generally fluctuate in accordance with changes in NAV as well as the relative supply of, and demand for, Shares on the applicable exchange or other securities exchanges. The trading price of Shares may deviate significantly from NAV during periods of market volatility or limited trading activity in Shares. In addition, you may incur the cost of the "spread," that is, any difference between the bid price and the ask price of the Shares.
Cost of Trading Risk. Investors buying or selling Shares in the secondary market will pay brokerage commissions or other charges imposed by brokers as determined by that broker. Brokerage commissions are often a fixed amount and may be a significant proportional cost for investors seeking to buy or sell relatively small amounts of Shares.
Trading Risk. Although the Shares are listed on the Exchange, there can be no assurance that an active or liquid trading market for them will develop or be maintained. In addition, trading in Shares on the Exchange may be halted. In stressed market conditions, the liquidity of Shares may begin to mirror the liquidity of its underlying portfolio holdings, which can be less liquid than Shares, potentially causing the market price of Shares to deviate from its NAV. The spread varies over time for Shares of the Fund based on the Fund's trading volume and market liquidity and is generally lower if the Fund has high trading volume and market liquidity, and higher if the Fund has little trading volume and market liquidity (which is often the case for funds that are newly launched or small in size).

Sector Risk. If the Fund's portfolio is overweighted in a certain sector, any negative economic, financial, market, business, or other developments affecting that sector will have a greater impact on the Fund than on a fund that is not overweighted in that sector. A certain sector may underperform other sectors or the market as a whole. Economic or market factors, regulation or deregulation, and technological or other developments may negatively impact all companies in a particular sector. This may increase the risk of loss associated with an investment in the Fund and increase the volatility of the Fund's net asset value per share.
• Information Technology Sector Risk. Market or economic factors impacting technology companies and companies that rely heavily on technological advances could have a significant effect on the value of the Fund's investments. The value of stocks of technology companies and companies that rely heavily on technology is particularly vulnerable to rapid changes in technology product cycles, rapid product obsolescence, government regulation and competition, both domestically and internationally, including competition from foreign competitors with lower production costs. Stocks of technology companies and companies that rely heavily on technology, especially those of smaller, less-seasoned companies, tend to be more volatile than the overall market. Technology companies are heavily dependent on patent and intellectual property rights, the loss or impairment of which may adversely affect profitability.

Market Risk. The Fund's investments are subject to changes in general economic conditions, general market fluctuations, and the risks inherent in investment in interest rate sensitive markets. Interest rate markets can be volatile and prices of investments can change substantially due to various factors including, but not limited to, economic growth or recession, the investment's average time to maturity, changes in interest rates, changes in the actual or perceived creditworthiness of issuers, and general market liquidity. The Fund is subject to the risk that geopolitical events will disrupt securities markets and adversely affect global economies and markets. Local, regional, or global events such as war, acts of terrorism, the spread of infectious illness or other public health issues, or other events could have a significant impact on the Fund and its investments.

Management Risk. The Fund is actively-managed and may not meet its investment objective based on the SubAdviser's or portfolio managers' success or failure to implement investment strategies for the Fund. The success of the Fund's investment program depends on the Sub-Adviser and the portfolio managers' skill in implementing the Fund's investment strategy. It is important to note that, as part of the security selection process, the Sub-Adviser does not perform any type of fundamental or quantitative analysis on the component companies. Security selection and weighting are driven primarily by a securities market capitalization.

Annual Reevaluation Risk. The Fund's investment universe will be reevaluated annually by the Sub-Adviser. As a result, the Fund's exposure to one or more securities may be affected by significant price movements promptly following the annual re-evaluation. Such lags between re-evaluations may result in significant performance swings relative to the broader equity markets.

Buying or Purchasing Options Risk. Options are instruments whose value is derived from that of other assets, rates, or indexes. Since many factors influence the value of an option, including the price of the underlying asset, the exercise price, the time to expiration, the interest rate, and the dividend rate of the underlying asset, the buyer's success in implementing an option buying strategy may depend on an ability to predict movements in the prices of individual assets, fluctuations in markets, and movements in interest rates. There is no assurance that a liquid market will exist when the buyer seeks to close out any option position.

PRINCIPAL INVESTMENT RISKS (cont'd)

Counterparty Risk. Counterparty risk is the risk that a counterparty to a financial instrument held by the Fund may become insolvent or otherwise fail to perform its obligations, and the Fund may obtain no or limited recovery of its investment, and any recovery may be significantly delayed. Exchange listed options are issued and guaranteed for settlement by the OCC. The Fund bears the risk that the OCC will be unable or unwilling to perform its obligations under the options contracts. In the unlikely event that the OCC becomes insolvent or is otherwise unable to meet its settlement obligations, the Fund could suffer significant losses. Also, since the Fund is not a member of the OCC (a "clearing member"), and only clearing members can participate directly in the OCC, the Fund will hold options contracts through commingled omnibus accounts at clearing members. As a result, Fund assets deposited with a clearing member as margin for options contracts may, in certain circumstances, be used to satisfy losses of other clients of the Fund's clearing member. Although clearing members guarantee performance of their clients' obligations to the OCC, there is a risk that Fund assets might not be fully protected in the event of the clearing member's bankruptcy.

New Fund Risk. The Fund is a recently organized investment company with limited or no operating history. As a result, prospective investors have limited or no track record or history on which to base their investment decision. There can be no assurance that the Fund will grow to or maintain an economically viable size.

Note on category average methodology

Constituents of a given category are determined by YCharts. As of 4/30/2024, the calculation method used to determine the category average's returns changed to account for potentially different inception dates. Previously, a straight average of constituent funds' total return net asset value (NAV) was used to determine the category's average total return NAV; the percent change of the category average NAV was then used to calculate returns. As of 4/30/2024, total returns for the category are now found using a straight average of the total NAV return (percent change) for a given frequency (daily, weekly, monthly, etc.). There may be instances where the straight average of the constituent funds' NAV returns may be higher or lower than the straight average of the total NAV return. As of 4/30/2024, all category average returns are calculated using the straight average of the constituent funds' total NAV return for a given frequency.

Category average constituent selection criteria

Unless otherwise noted, the given category is represented by the 50 biggest funds based on assets under management (AUM). The AUM figure is point-in-time and is not retroactively applied to constituent funds. In the event fewer than 50 funds are available in a given category, all funds are used in to calculate returns. Funds that may have been open for investment over the given period but are no longer active are not included. The number of constituent funds in a given category average may affect represented returns. In the event of multiple share classes, the share class with the highest AUM is referenced. In the event of a duplicate ETFs and mutual funds from the same fund family, the ETF is referenced. Category returns are a straight average of the total return of the constituent funds over the given period. Wherever possible, we reference the 50 biggest funds by AUM to provide what we believe to be a reasonable sample of the most popular strategies that includes a mix of passive and active approaches. The highest AUM funds tend to have more established track records, providing what we believe to be a reasonable basis for returns. We reference all funds in the category in the event there are fewer than 50 funds open for investment.

Limited universe

The information presented regarding peer ETFs may be based on a limited universe of comparable funds that we believe are relevant to the strategy, investment style, and asset class of this ETF. This comparison is not exhaustive and may exclude other funds that also offer similar exposures or strategies. Investors are encouraged to conduct their own research and consider other products in the marketplace that may provide comparable investment objectives or characteristics. Past performance is no guarantee of future results, and differences in fees, structures, or market conditions may lead to different outcomes between peer funds and this ETF. Investors should consider factors such as risk tolerance, fees, liquidity, and investment goals before making any investment decisions based on peer comparisons. This disclosure is not an endorsement of any peer fund, nor should it be interpreted as financial advice.

Category averages referenced

US Large Blend ("US Stocks") composed of the 50 biggest ETFs in the US Equity broad asset class, Large Blend category based on assets under management (AUM). Large Blend portfolios are fairly representative of the overall US stock market in size, growth, rates, and price. Stocks in the top 70% of the capitalization of the US equity market are defined as large cap. The blend style is assigned to portfolios where neither growth nor value characteristics predominate. These portfolios tend to invest across the spectrum of US industries, and owing to their broad exposure, the portfolios' returns are often similar to those of the S&P 500 Index. Category derived by Alpha Architect based on categories determined by YCharts.

The Funds are distributed by PINE Distributors LLC. The Fund's investment adviser is Empowered Funds, LLC, which is doing business as ETF Architect. Alpha Architect, LLC serves as the Sub-adviser to the Fund. PINE Distributors LLC is not affiliated with ETF Architect or Alpha Architect, LLC.

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