



# Guide to ETFs

1Q 2026

As of December 31, 2025





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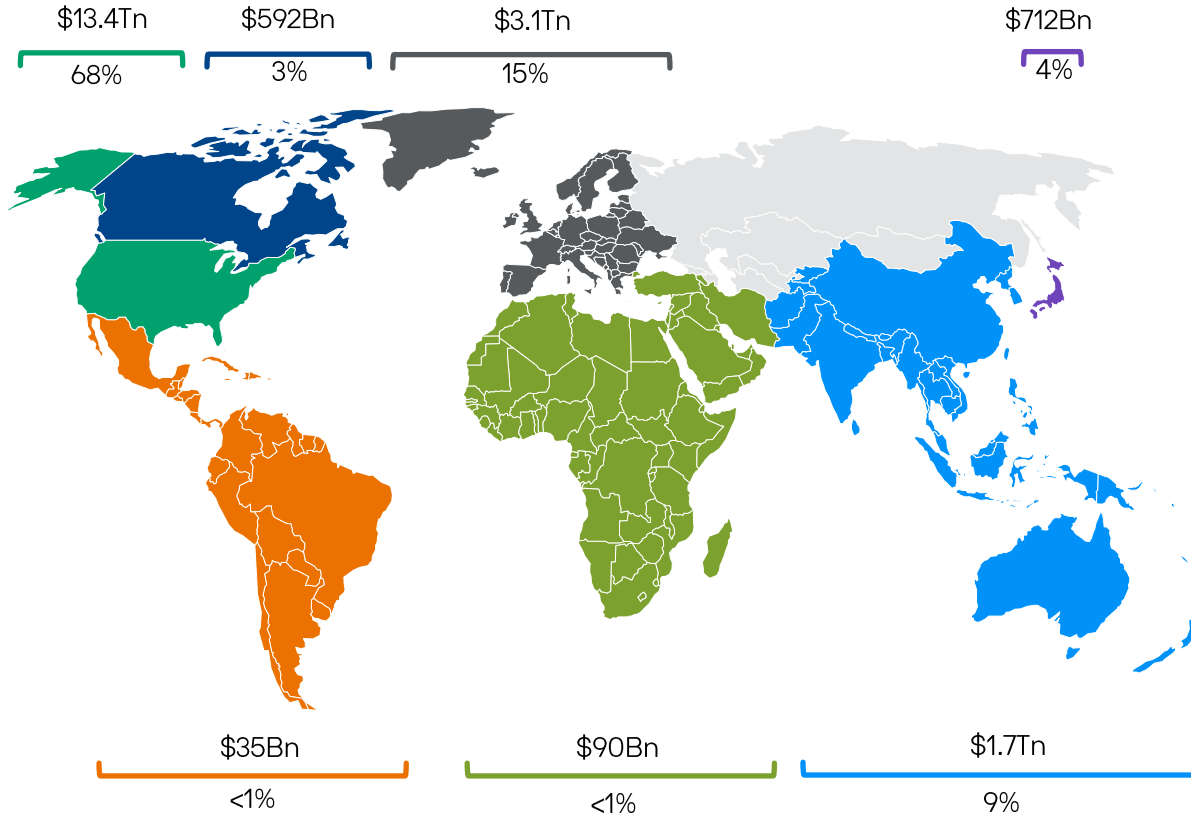
# Global ETF AUM by region

GTE

U.S.

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U.S. market represents about 70% of the global ETF landscape.



## 2025 ETF landscape

No. of ETFs ~13,900

ETF assets ~\$19.7Tn

Net flows ~+\$2.24Tn

15 years of consecutive net flows

Source: Bloomberg, J.P. Morgan Asset Management. Provided for information only to illustrate macro trends, not to be construed as offer, research or investment advice. Assets are represented by ETFs across countries of domicile in USD. Global consists of Australia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Egypt, Finland, France, Germany, Guernsey, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Japan, Luxembourg, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Saudia Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE, United States and Vietnam.

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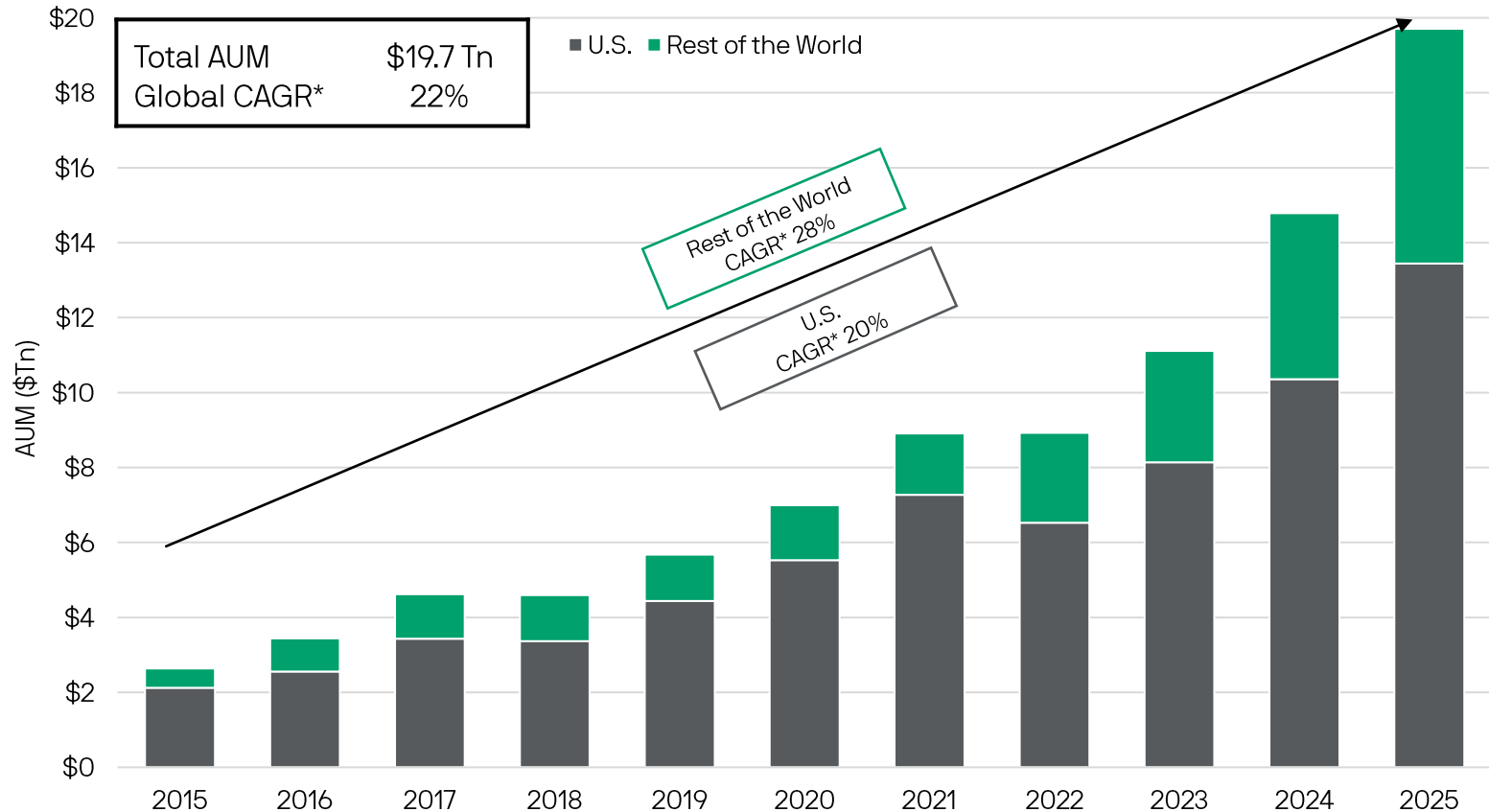


# Global ETF AUM growth over time

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Source: Bloomberg, J.P. Morgan Asset Management. Rest of the world consists of Australia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Egypt, Finland, France, Germany, Guernsey, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Japan, Luxembourg, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Saudia Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE and Vietnam. \*Compound annual growth rate (CAGR).

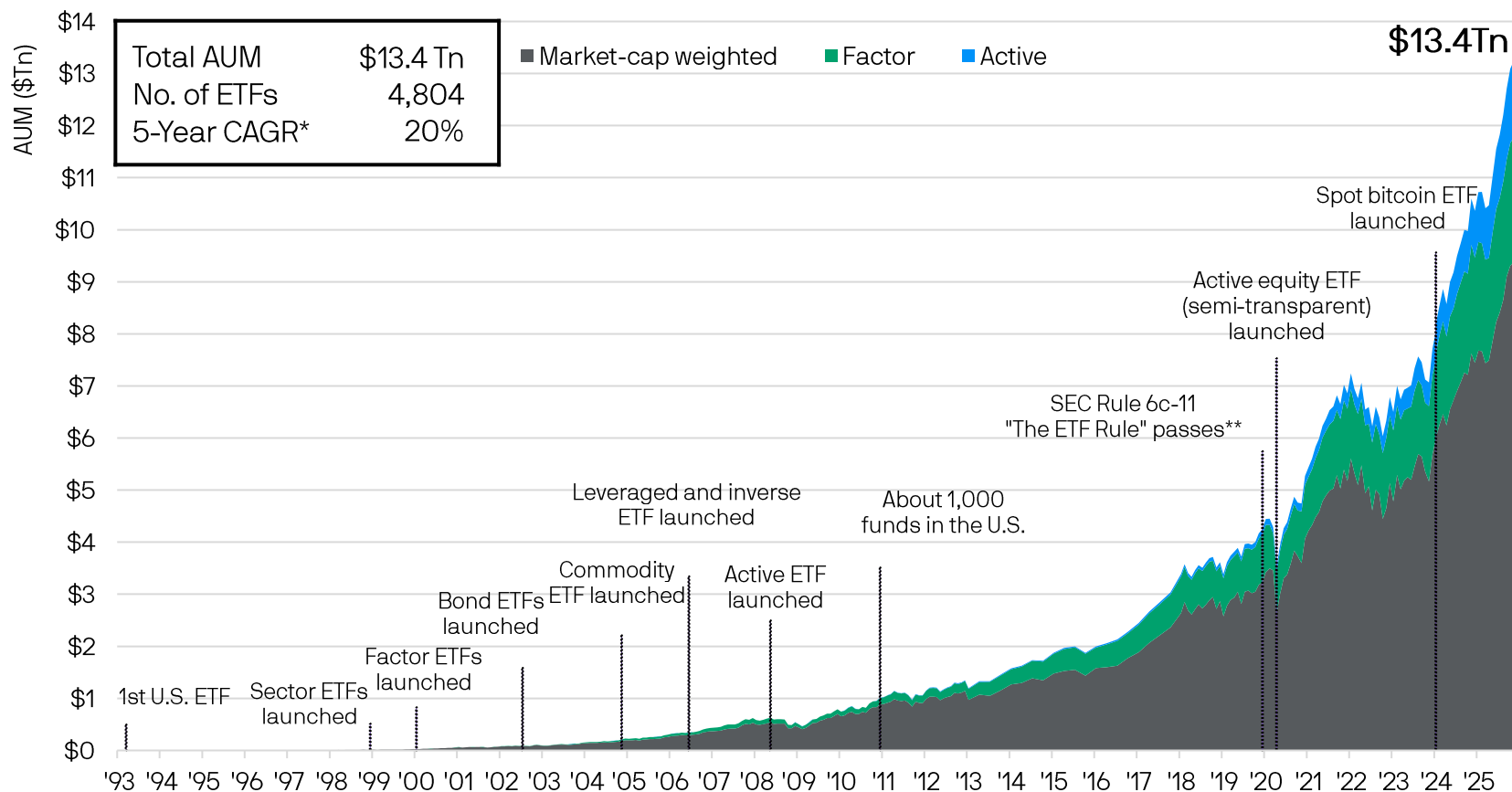
Guide to ETFs – U.S. Data as of December 31, 2025.



# U.S. ETF market milestones

ETF assets have grown significantly over the past two decades.

U.S. ETF AUM (\$Tn)



Source: Bloomberg, J.P. Morgan Asset Management. \*Compound annual growth rate (CAGR). \*\*The ETF Rule, passed in 2019 modernized regulation of ETFs as open-ended funds by establishing clear and consistent framework for most ETFs across both index and actively managed strategies, enabling ETF issuers to bring new strategies to market, and permitting "custom in-kind" creation and redemption baskets to be available for all types of covered ETFs under the new regulation.  
Guide to ETFs – U.S. Data as of December 31, 2025.



## 6



Source: Bloomberg, J.P. Morgan Asset Management. Compound annual growth rate (CAGR). *Guide to ETFs – U.S.* Data as of December 31, 2025.



# U.S. ETF market share vs. mutual funds

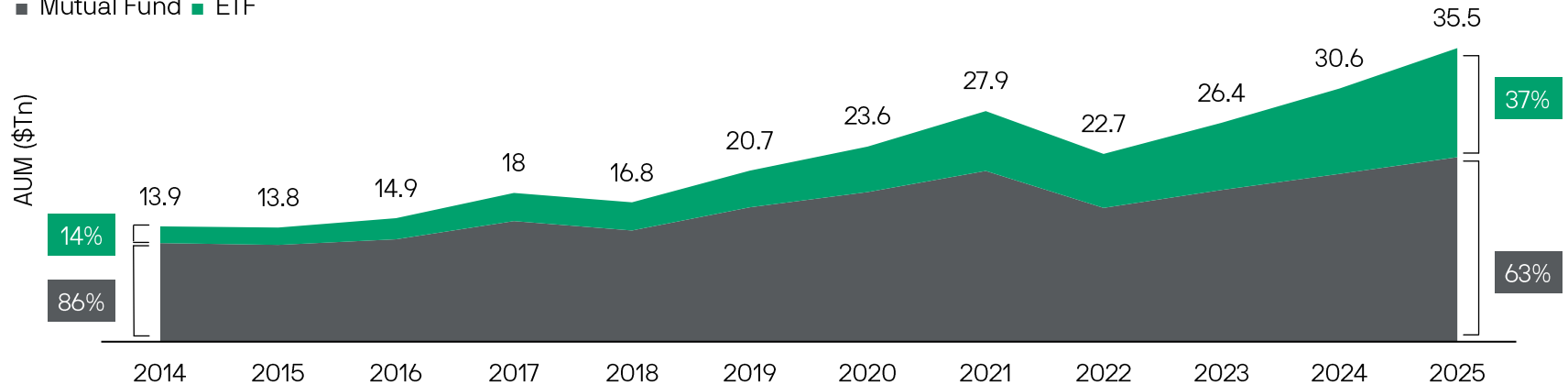
GTE

U.S.

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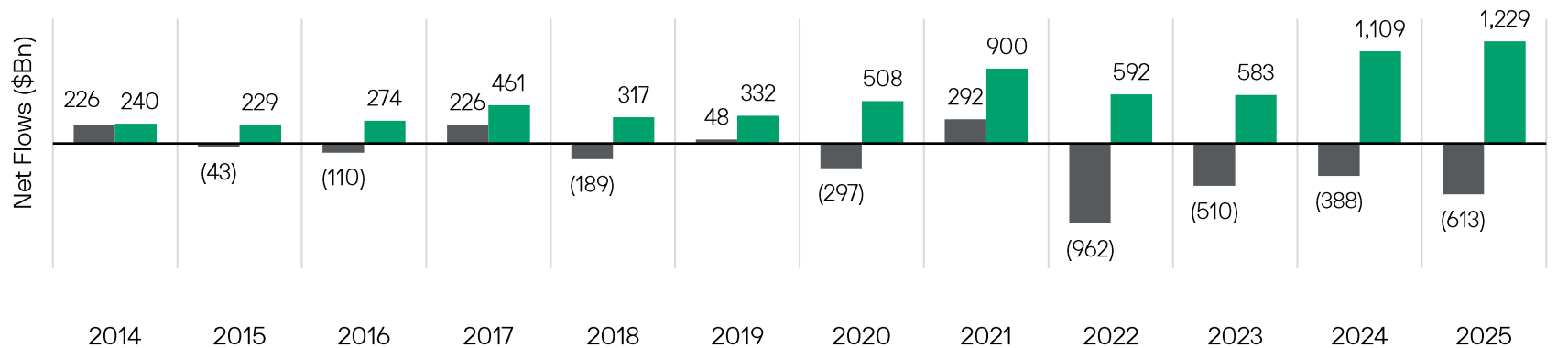
## U.S. ETFs and mutual funds, by AUM

■ Mutual Fund ■ ETF



## U.S. ETFs and mutual funds, by net flows

■ Mutual Fund ■ ETF



Source: Morningstar, J.P. Morgan Asset Management, charts reflect the most recently available data as of November 30, 2025. Excluding money market and fund of funds.  
Guide to ETFs – U.S. Data as of December 31, 2025.



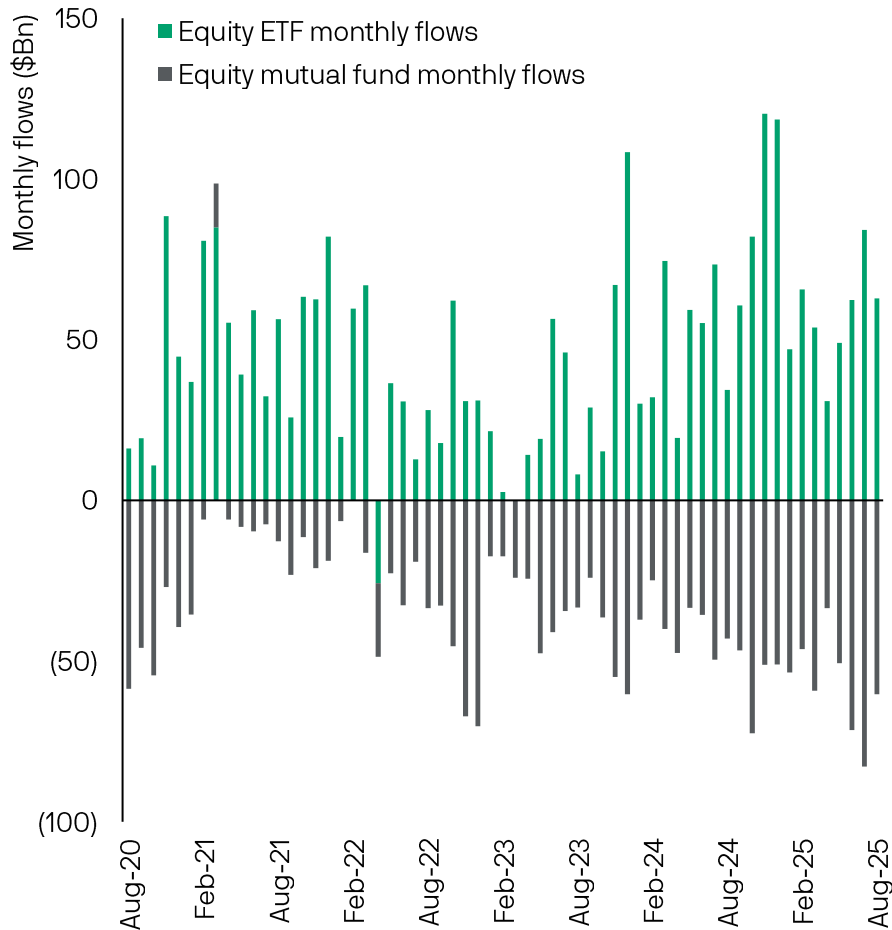
# Equity ETF and mutual fund flows and capital gains

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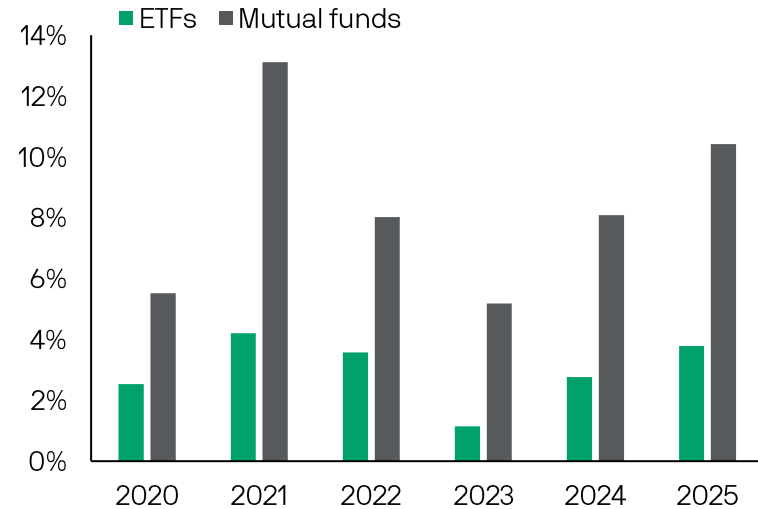
U.S.

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### Trailing 5-year monthly equity mutual fund and ETF net flows



### Equity Funds: Average capital gains/net asset value (NAV)



### % of equity funds that paid a capital gain

	2020	2021	2022	2023	2024	2025
ETFs	3%	9%	4%	3%	4%	6%
Mutual funds	48%	70%	55%	41%	57%	62%

Includes both active and passive ETFs and mutual funds

Source: Morningstar, J.P. Morgan Asset Management. Left side, data as of November 30, 2025. Right side, data as of December 31, 2025.  
Guide to ETFs – U.S. Data as of December 31, 2025.





# ETFs by type and industry leaders ranked by AUM

GTE U.S. 9



Market Cap

Index tracking market  
exposures  
AUM: \$9.5Tn

Top 5 Issuers  
92% of AUM

BlackRock  
Vanguard  
SPDR  
Invesco  
Schwab

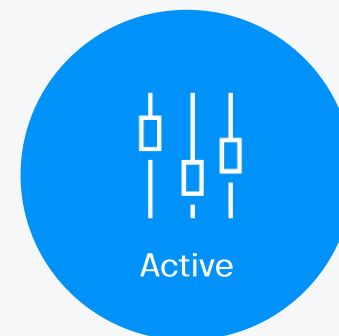


Factor

Risk aware weighting  
and / or factor exposure  
AUM: \$2.4Tn

Top 5 Issuers  
86% of AUM

Vanguard  
BlackRock  
Invesco  
Schwab  
SPDR



Active

Portfolio is actively managed  
AUM: \$1.5Tn

Top 5 Issuers  
50% of AUM

DFA  
JPMorgan  
Capital Group  
First Trust  
Avantis



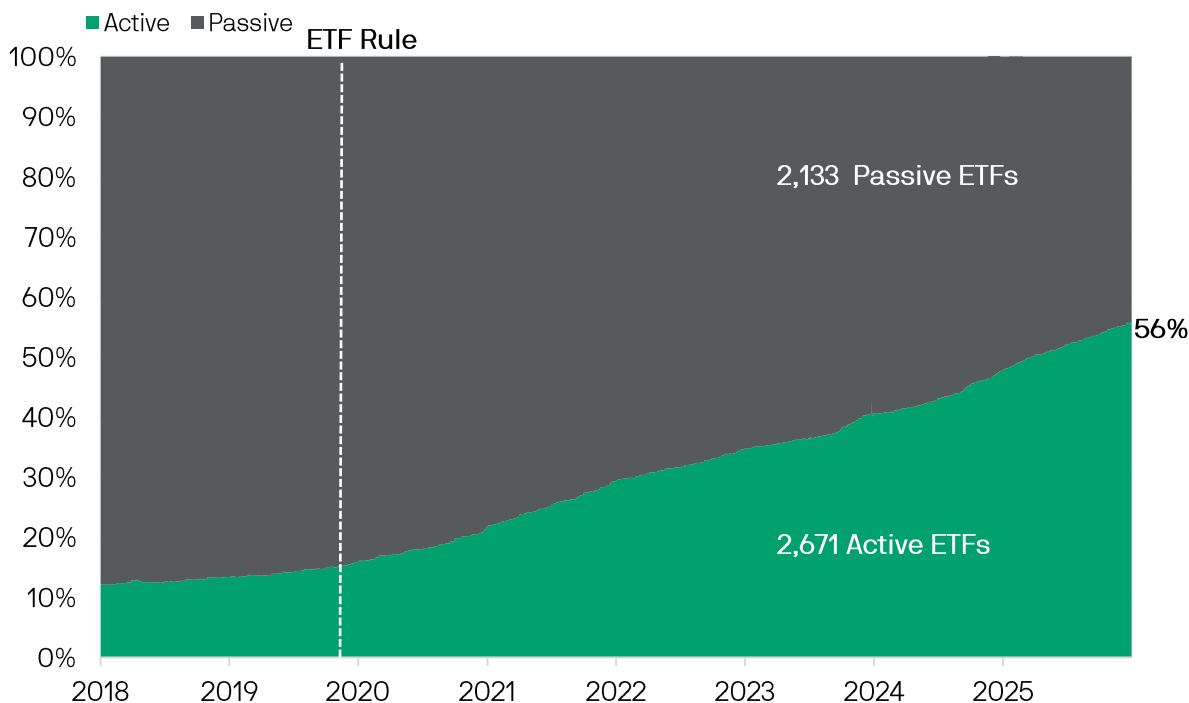
# Why has active ETF issuance increased?

GTE U.S. 10

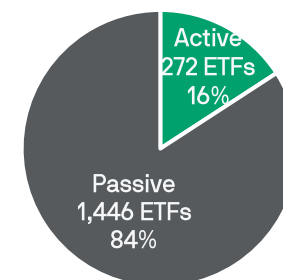
## What was the ETF Rule of 2019?

- Streamlined 40 Act ETF regulations
- Let ETF issuers move faster
- Allowed "custom in-kind" basket

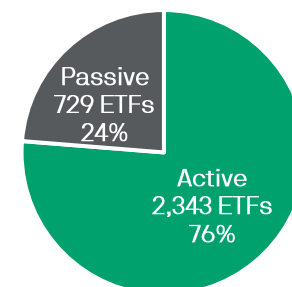
### Passive vs. Active (% of total ETFs by product count)



### ETFs pre-ETF Rule 1,718 ETFs



### ETFs launched post-ETF Rule 3,072 ETFs



Source: Bloomberg, J.P. Morgan Asset Management. Passed in 2019, the ETF Rule, or the SEC Rule 6c-11 under the Investment Company Act of 1940, modernized regulation of ETFs as open-ended funds by establishing clear and consistent framework for most ETFs across both index and actively managed strategies, enabling ETF issuers to bring new strategies to market, and permitting "custom in-kind" creation and redemption baskets to be available for all types of covered ETFs under the new regulation.  
Guide to ETFs – U.S. Data as of December 31, 2025.



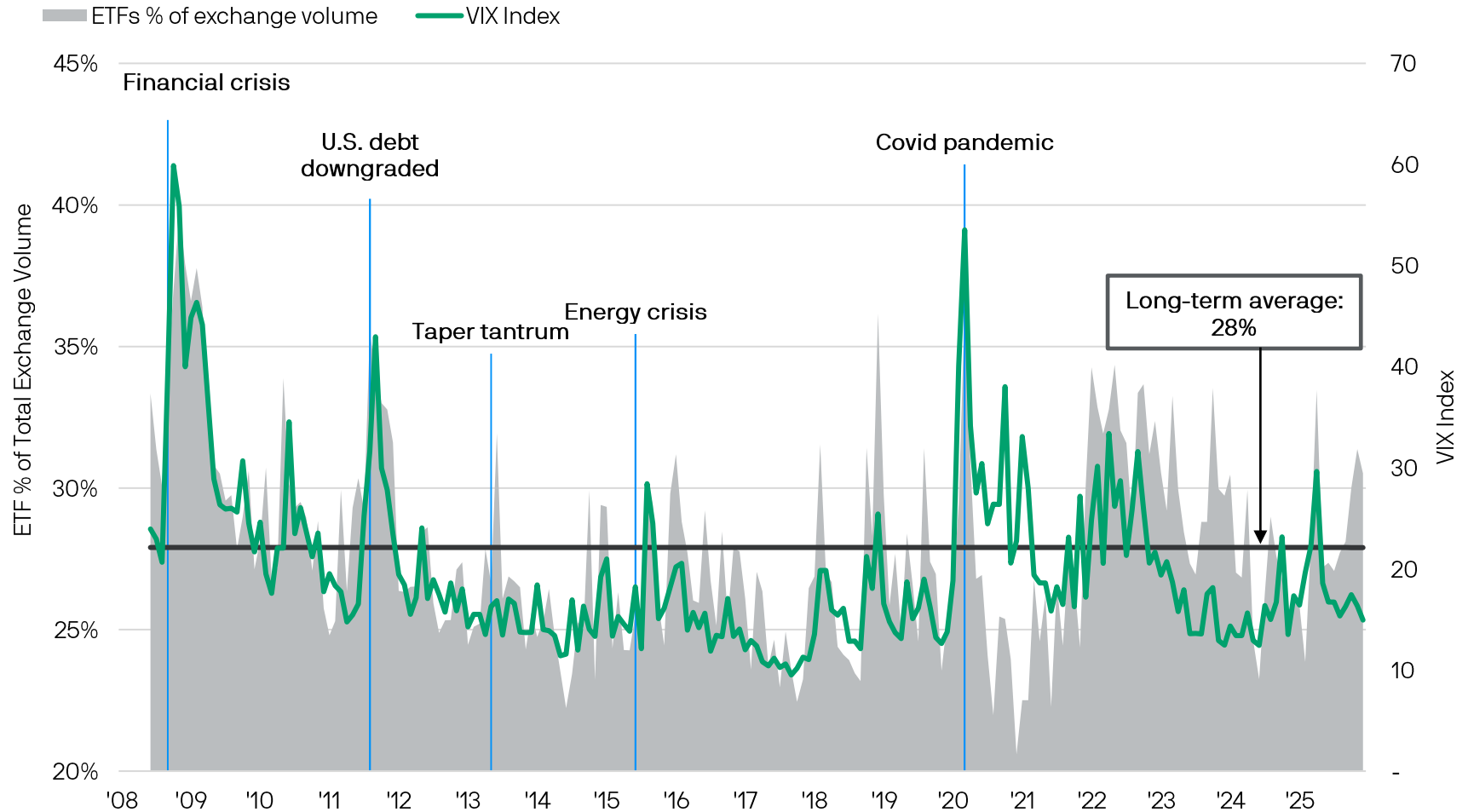
# ETF exchange volume during periods of volatility

GTE

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Exchange volume highlights ETF market's liquidity



Source: Bloomberg, J.P. Morgan Asset Management. The CBOE Volatility Index, or VIX Index, is a real-time market index representing the market's expectations for volatility over the coming 30 days.  
Guide to ETFs – U.S. Data as of December 31, 2025.



# Investors turning to ETFs

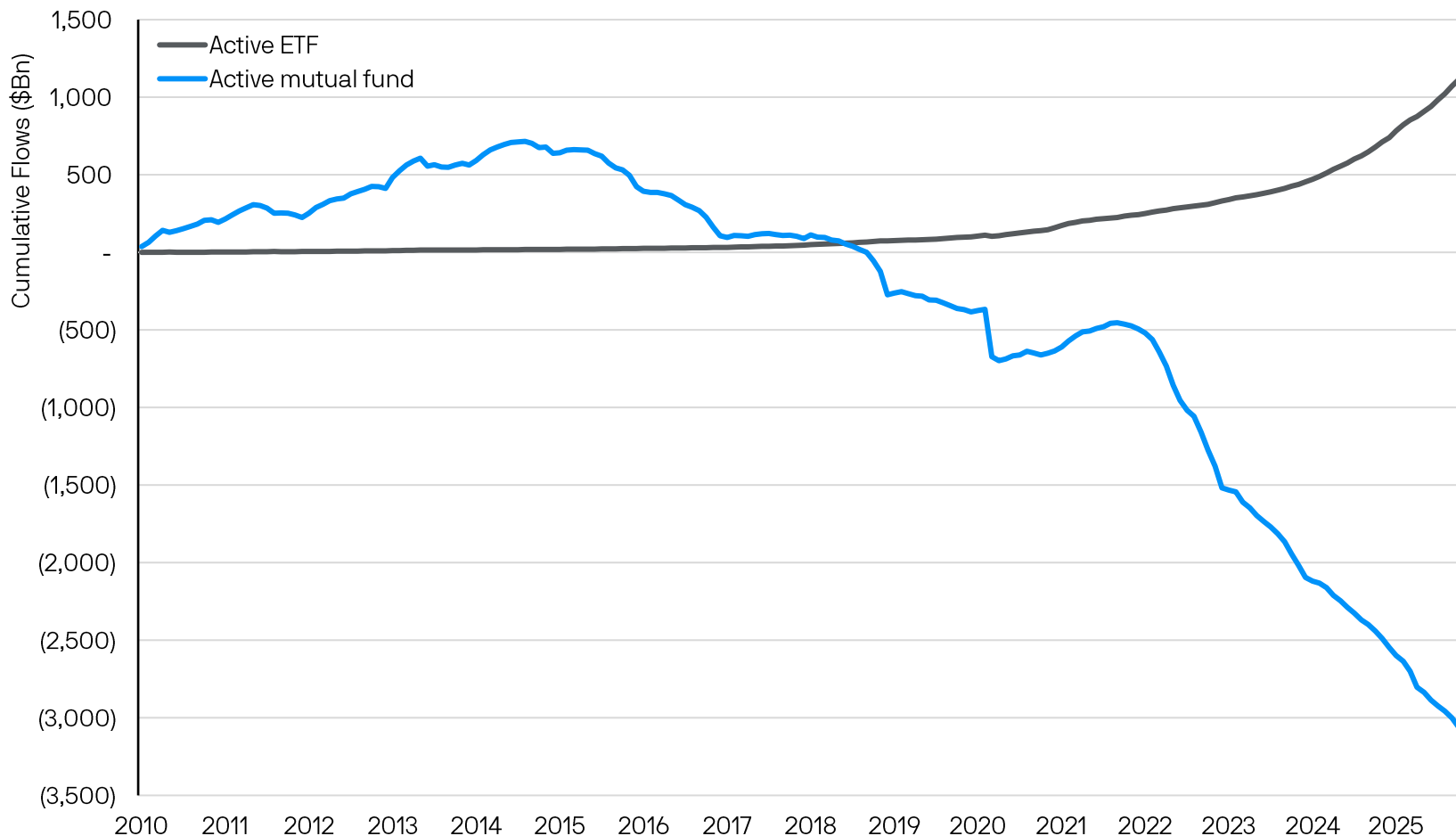
GTE

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## Active flows across investment structure

Active



Source: Morningstar, J.P. Morgan Asset Management. Data as of November 30, 2025. Excluding money market and fund of funds.  
Guide to ETFs – U.S. Data as of December 31, 2025.

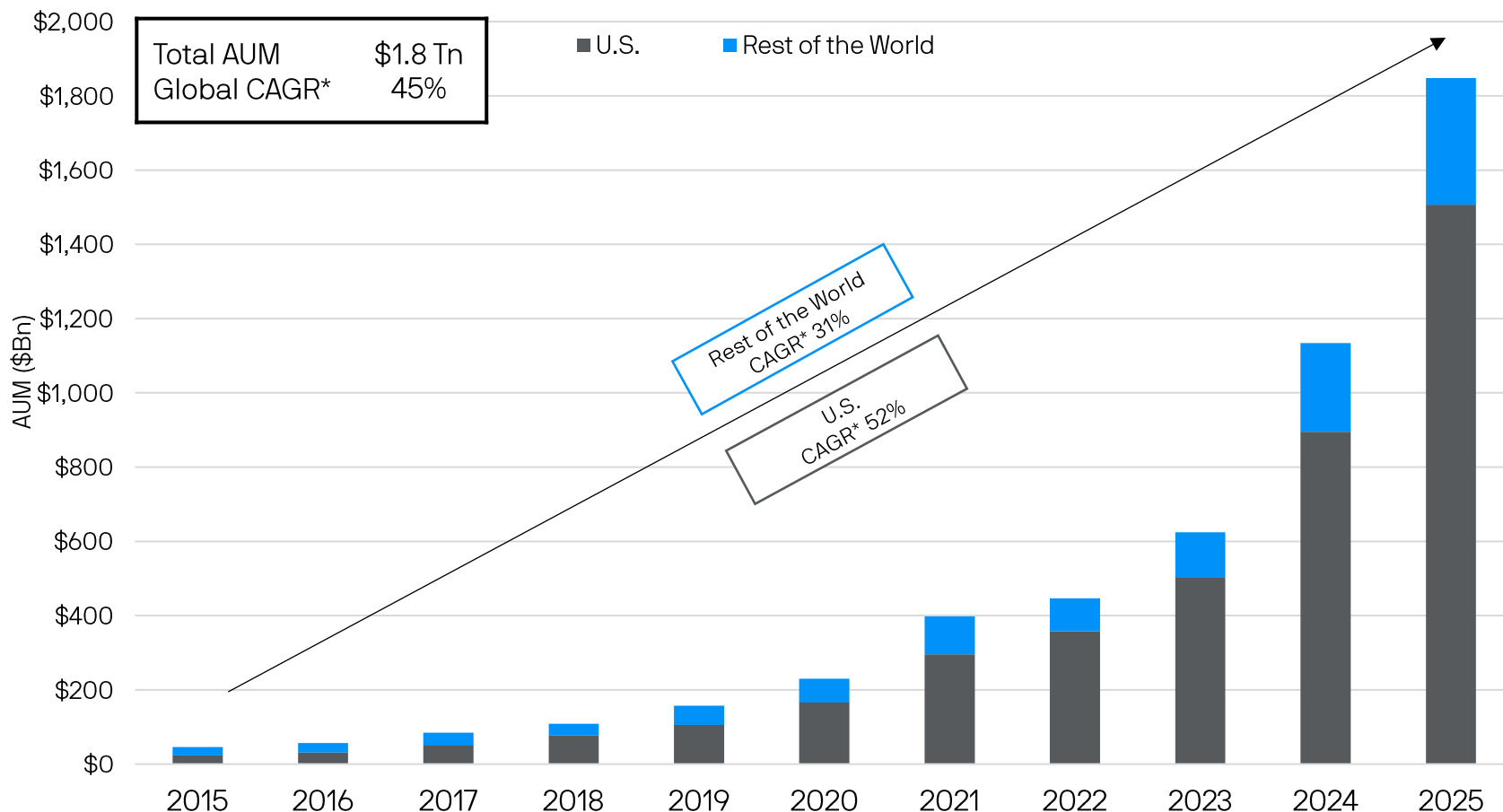
**J.P.Morgan**  
ASSET MANAGEMENT



# Over a decade of active ETF growth

GTE U.S. 13

Active



Active ETFs are determined by non-index funds Rest of the world consists of Australia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Egypt, Finland, France, Germany, Guernsey, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Japan, Luxembourg, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Saudia Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE and Vietnam. \*Compound annual growth rate (CAGR). Source: Bloomberg, J.P. Morgan Asset Management.  
Guide to ETFs – U.S. Data as of December 31, 2025.

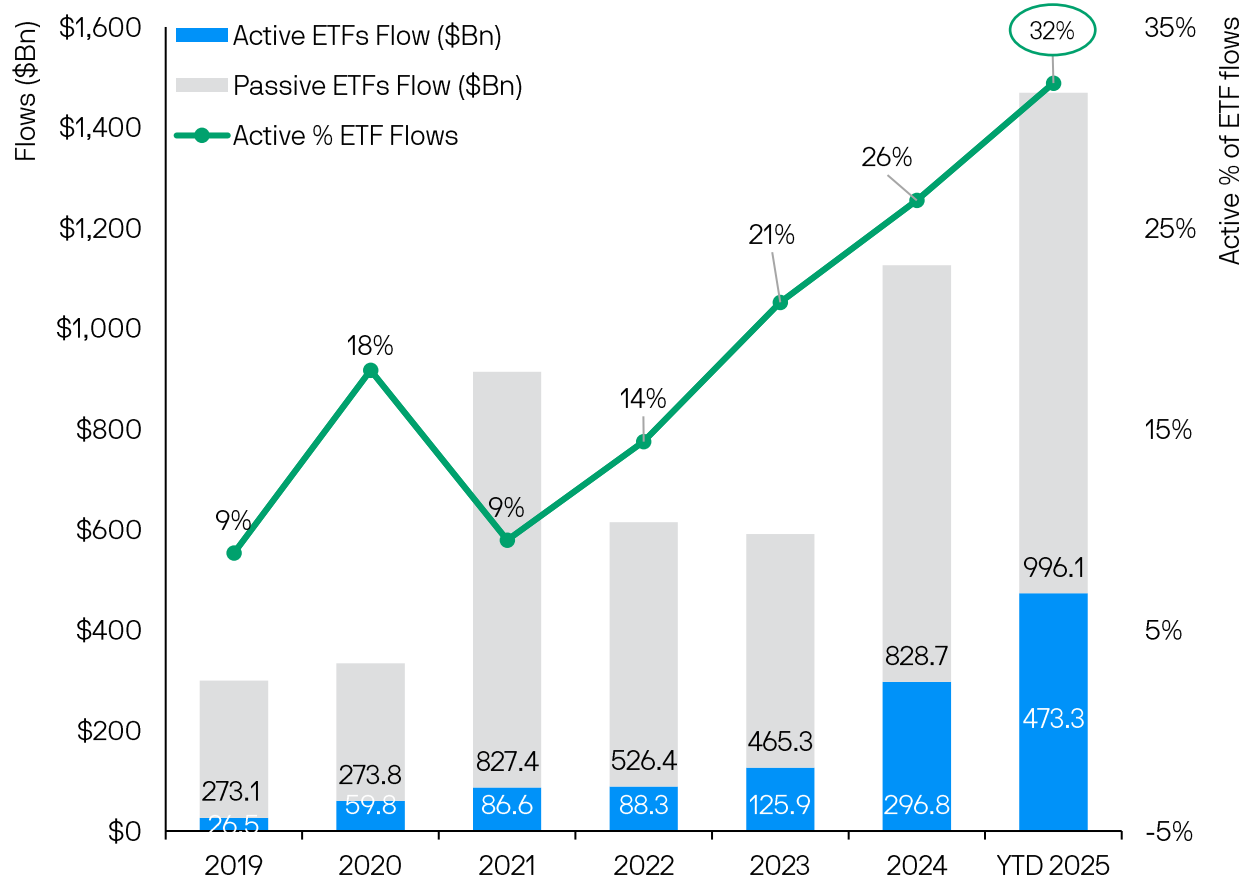


# Active ETFs take market share

GTE U.S. 14

Active

## Active U.S. ETF flows steadily increasing



Flows into active ETFs in 2024 were over 18 x all the flows into active ETFs in 2019

Active ETFs have taken in about 32% of all flows into ETFs in 2025



# Active management in an ETF structure

GTE

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Active



**Active  
Management**

- Research
- Security selection
- Portfolio construction

**Active  
ETFs**

**ETF  
Benefits**



- Daily transparency
- Intraday liquidity
- Low cost
- Tax efficiency
- Accessibility

Source: J.P. Morgan Asset Management. For illustrative purposes only.  
Guide to ETFs – U.S. Data as of December 31, 2025.

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# Diversification with lower beta strategies

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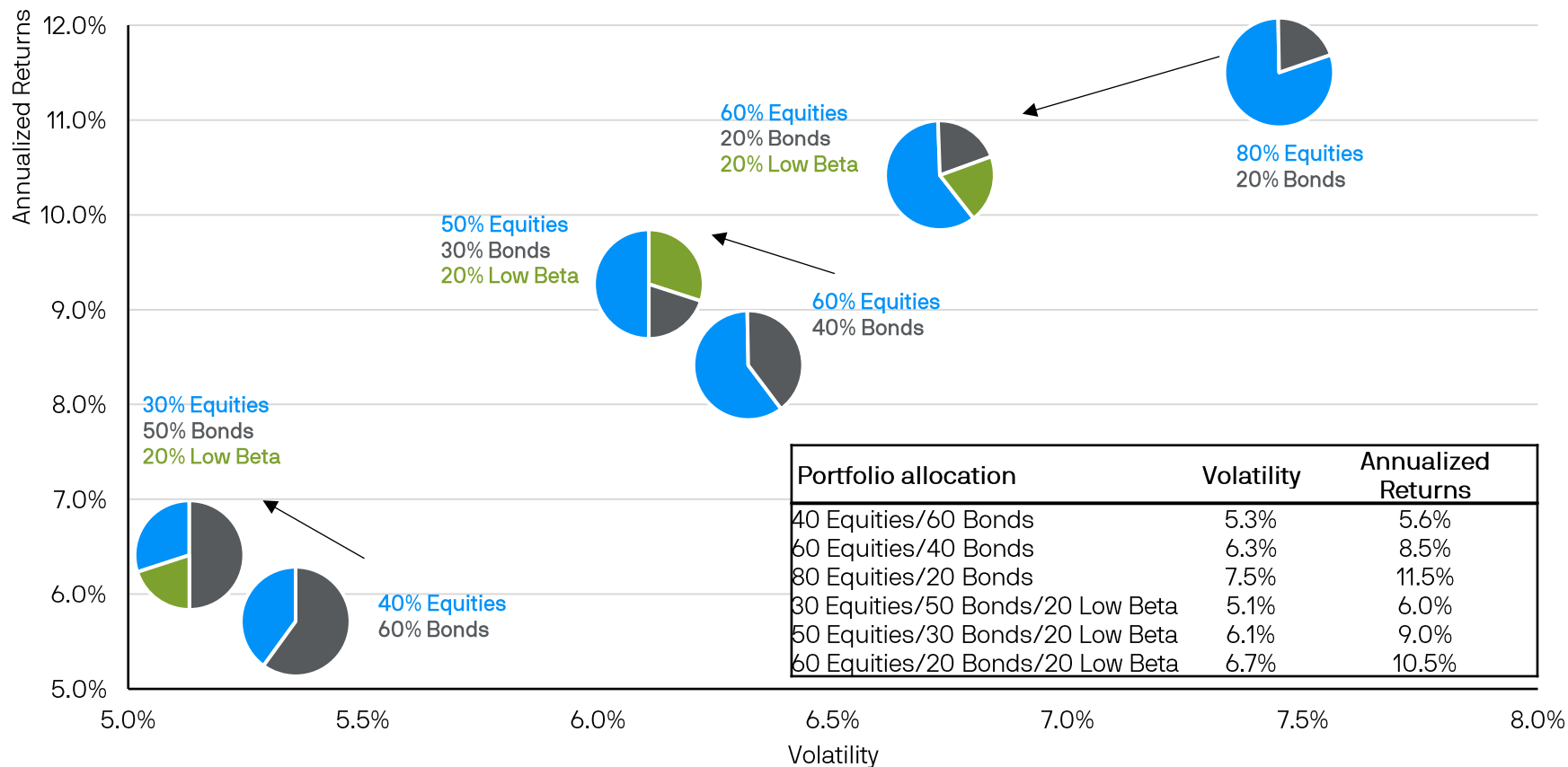
U.S.

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## Low Beta and portfolio risk/return

Annualized volatility and returns, December 2020 – December 2025

Active



Source: Bloomberg, J.P. Morgan Asset Management. Portfolios are rebalanced at the start of the year. Equities are represented by the S&P 500 Index, Bonds are represented by the Bloomberg U.S. Aggregate Index, Low Beta are represented by two strategies equally weighted that have historically had a beta of 0.6 and 0.5, respectively over the represented period. Volatility is calculated as the annualized standard deviation of quarterly returns. Past performance is not a reliable indicator of current and future results.  
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# Scaling ETFs requires more than market presence

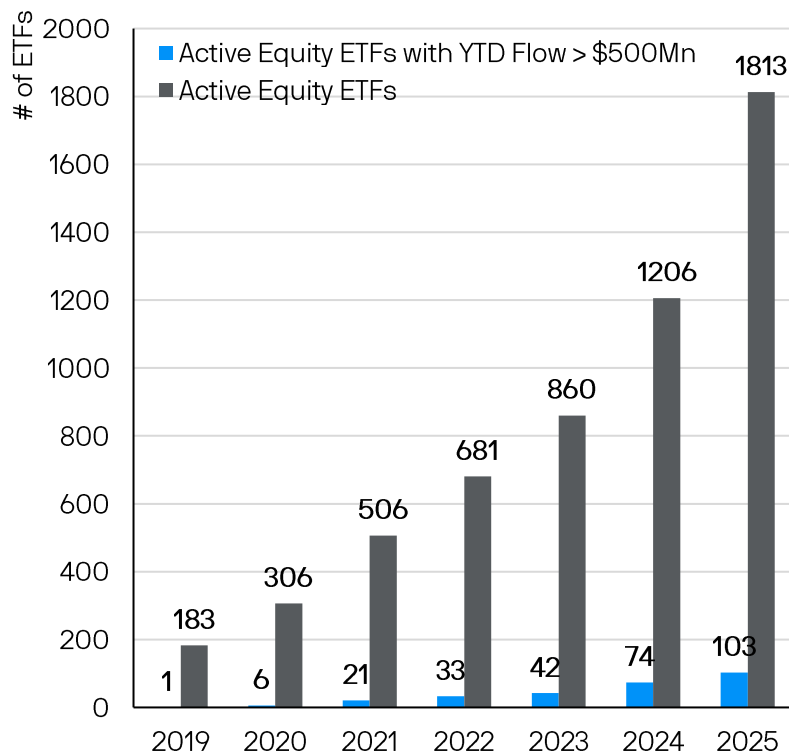
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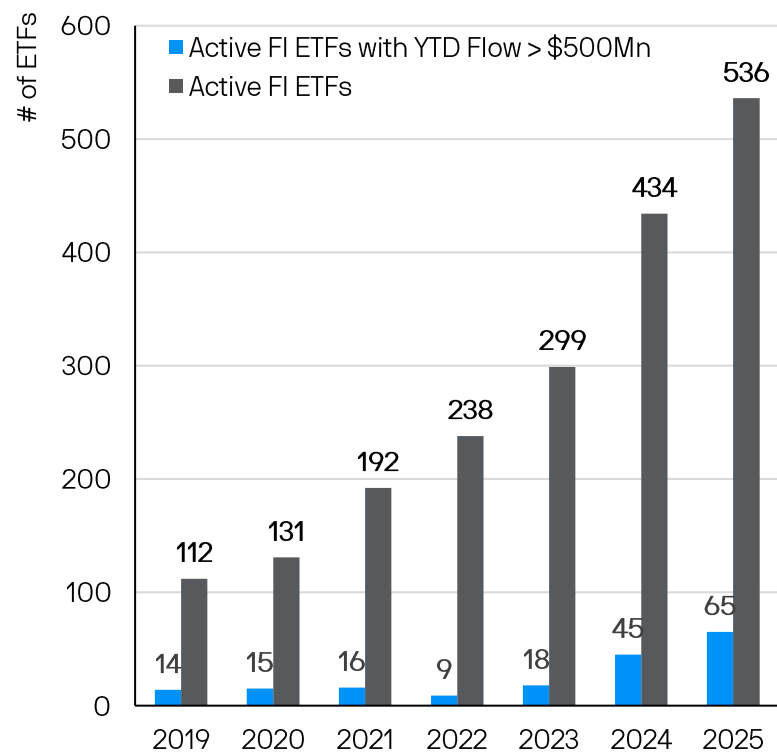
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Active

## Equity ETFs



## Fixed Income (FI) ETFs



Top 5 active equity ETFs, by flows, accounted for about 18% of inflows in 2025



Top 5 active fixed income ETFs, by flows, account for about 24% of inflows in 2025



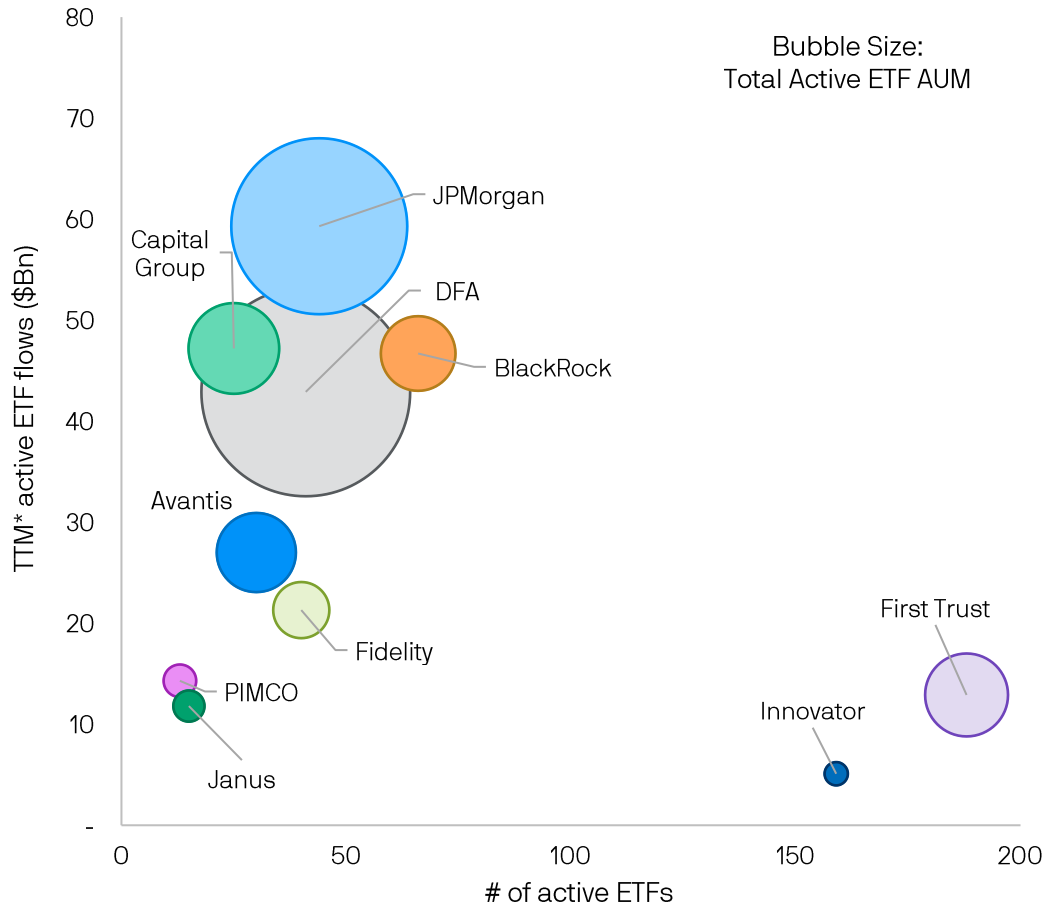
# Key players in the active ETF space

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## Top 10 active ETF issuers by AUM



	Active ETF AUM (\$Bn)	TTM* Active ETF Flow (\$Bn)	# of Active ETFs
DFA	244.2	42.9	41
JPMorgan	206.2	59.3	44
Capital Group	107.4	47.2	25
First Trust	98.4	12.9	188
Avantis	94.1	27.0	30
BlackRock	88.8	46.7	66
Fidelity	67.4	21.3	40
PIMCO	40.1	14.3	13
Janus	38.5	11.8	15
Innovator	29.3	5.1	159

Source: Bloomberg, J.P. Morgan Asset Management. \*Trailing twelve months (TTM)  
Guide to ETFs – U.S. Data as of December 31, 2025.



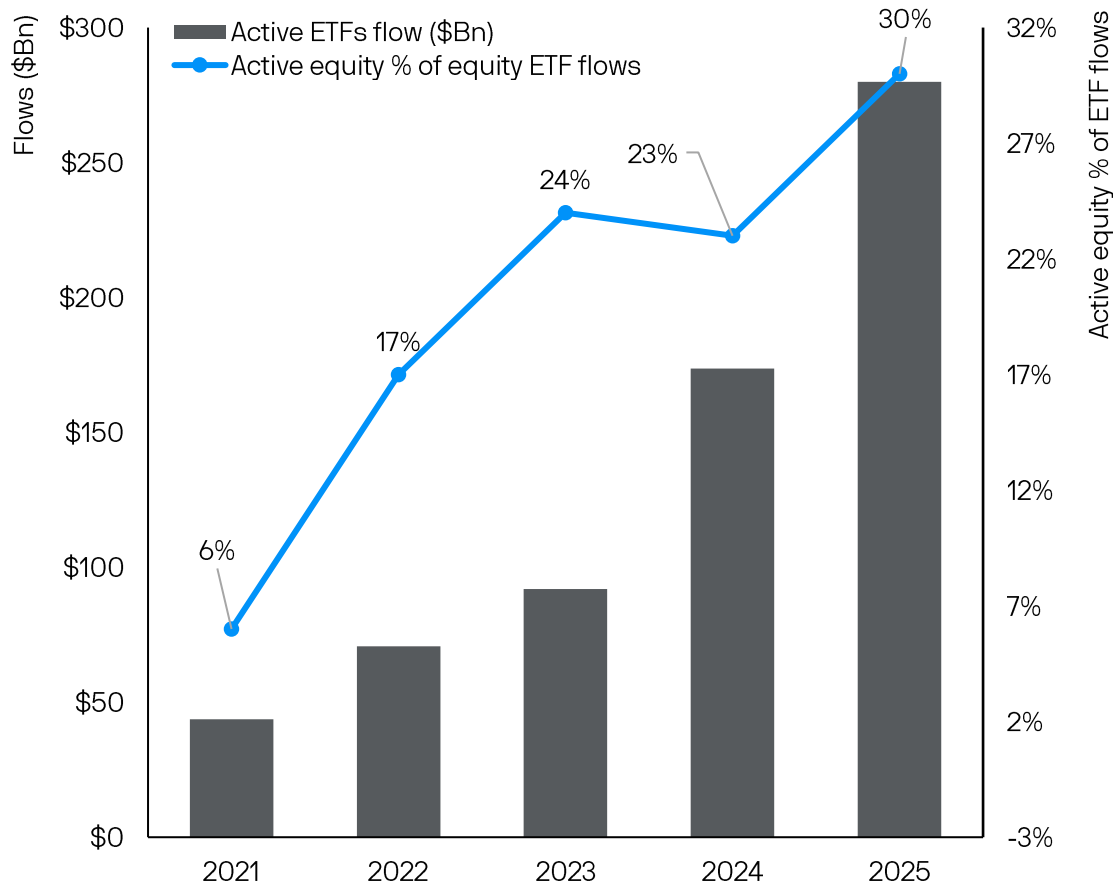
# Active U.S. equity ETF flows

GTE

U.S.

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## Active U.S. equity ETF flows



## Industry flows by category (\$Mn)

Category	YTD flow	% of flows YTD	AUM
Derivative Income	54,070	17%	127,000
Large Blend	50,975	16%	204,690
Large Value	27,522	9%	83,466
Foreign Large Blend	22,318	7%	81,272
Large Growth	20,919	6%	73,328
Technology	12,930	4%	21,100
Defined Outcome	12,548	4%	76,319
Diversified Emerging Mkts	11,116	3%	39,416
Trading-- Leveraged Equity	8,518	3%	26,547
Mid-Cap Blend	6,411	2%	14,156

Active

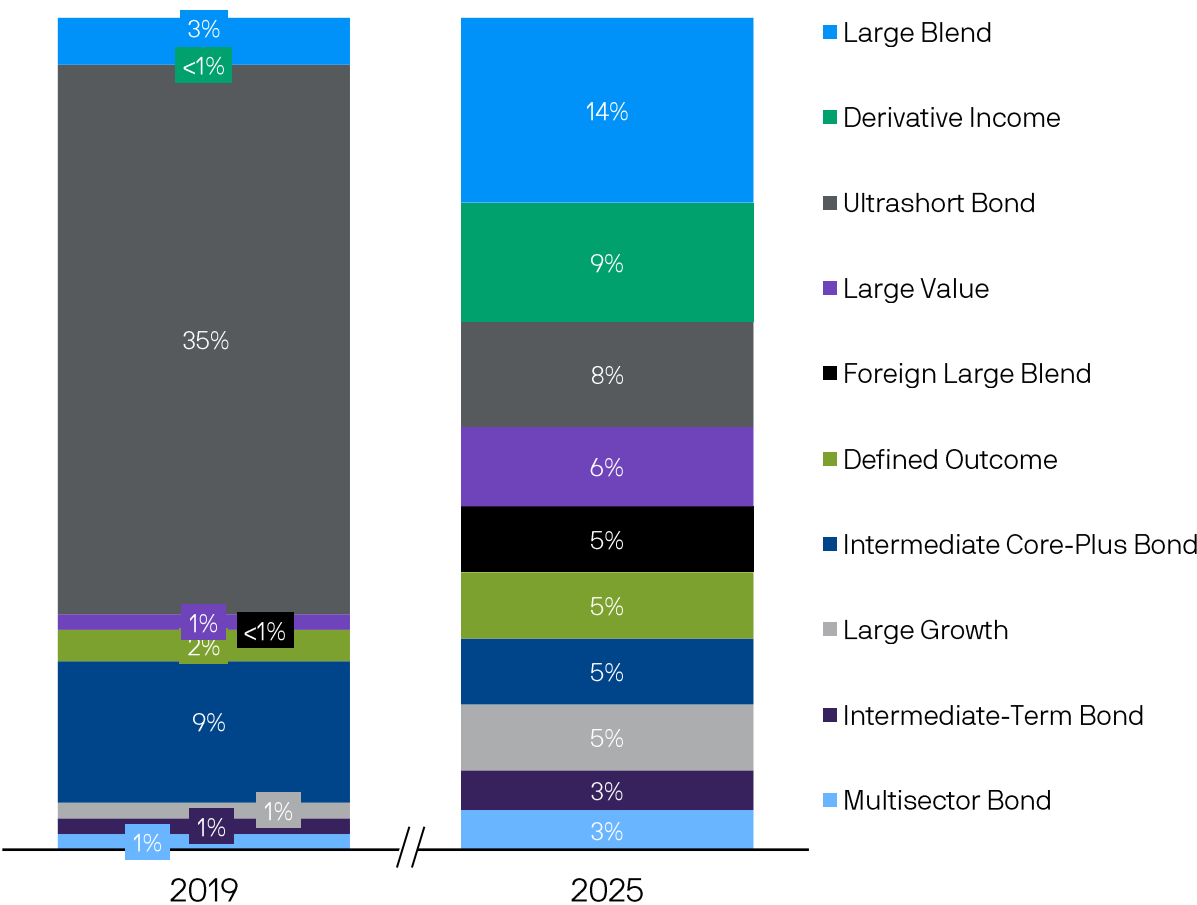
Source: Bloomberg, J.P. Morgan Asset Management.  
Guide to ETFs – U.S. Data as of December 31, 2025.



# Growth trends within the active ETF market

Active

Active AUM across Morningstar categories



AUM	2019	2025
Select categories	\$56Bn	\$932.6Bn
Active ETF total	\$108.4Bn	\$1.5Tn

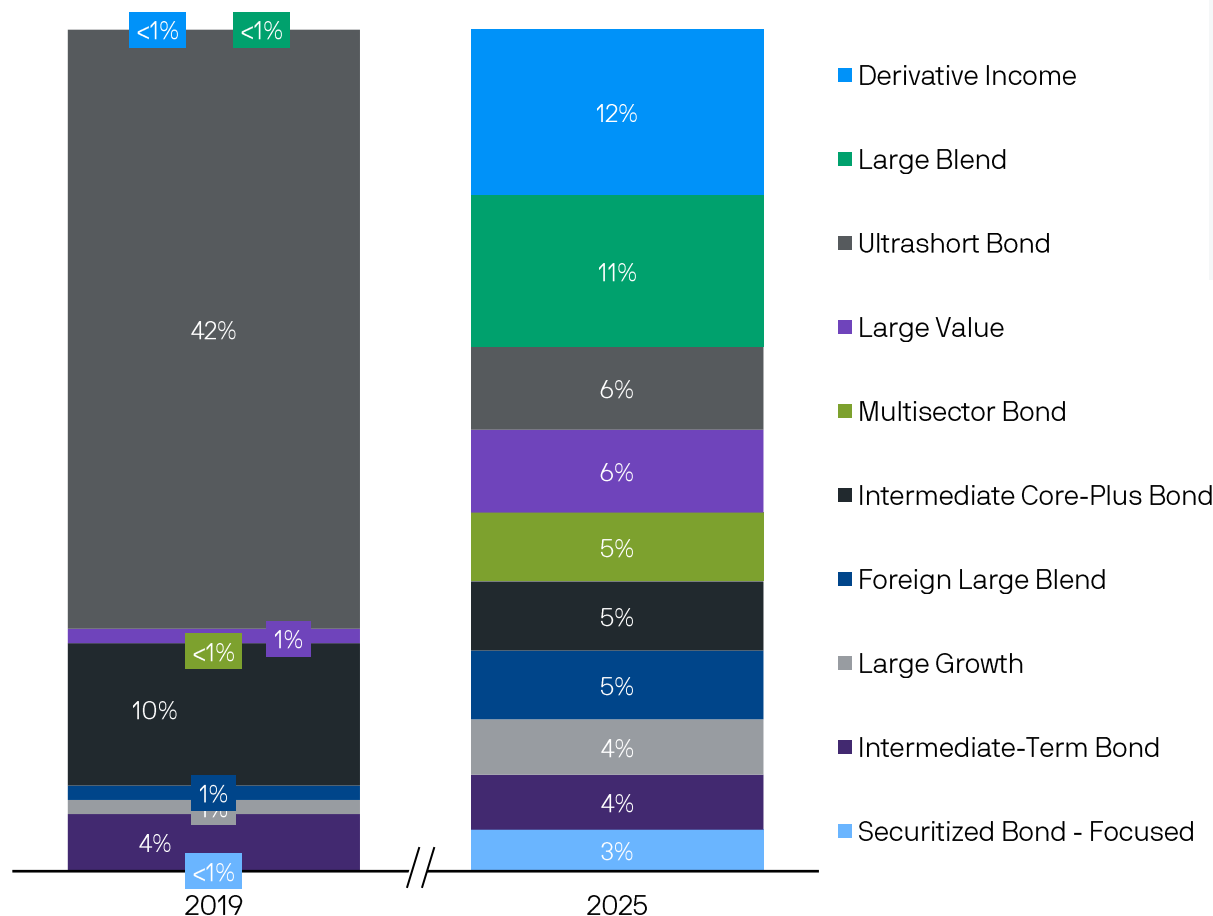
Source: Bloomberg, Morningstar, J.P. Morgan Asset Management. Category AUM percentages are percentages of overall active AUM and total percentages will likely not sum to 100% given not all active categories are represented in the chart. \*Total AUM of the selected categories.  
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# Active category flows over time

GTE U.S. 21

Percent of active flows across Morningstar categories



AUM	2019	2025
Select categories	\$15.6Bn	\$289.4Bn
Active ETF total	\$26.5Bn	\$473.3Bn

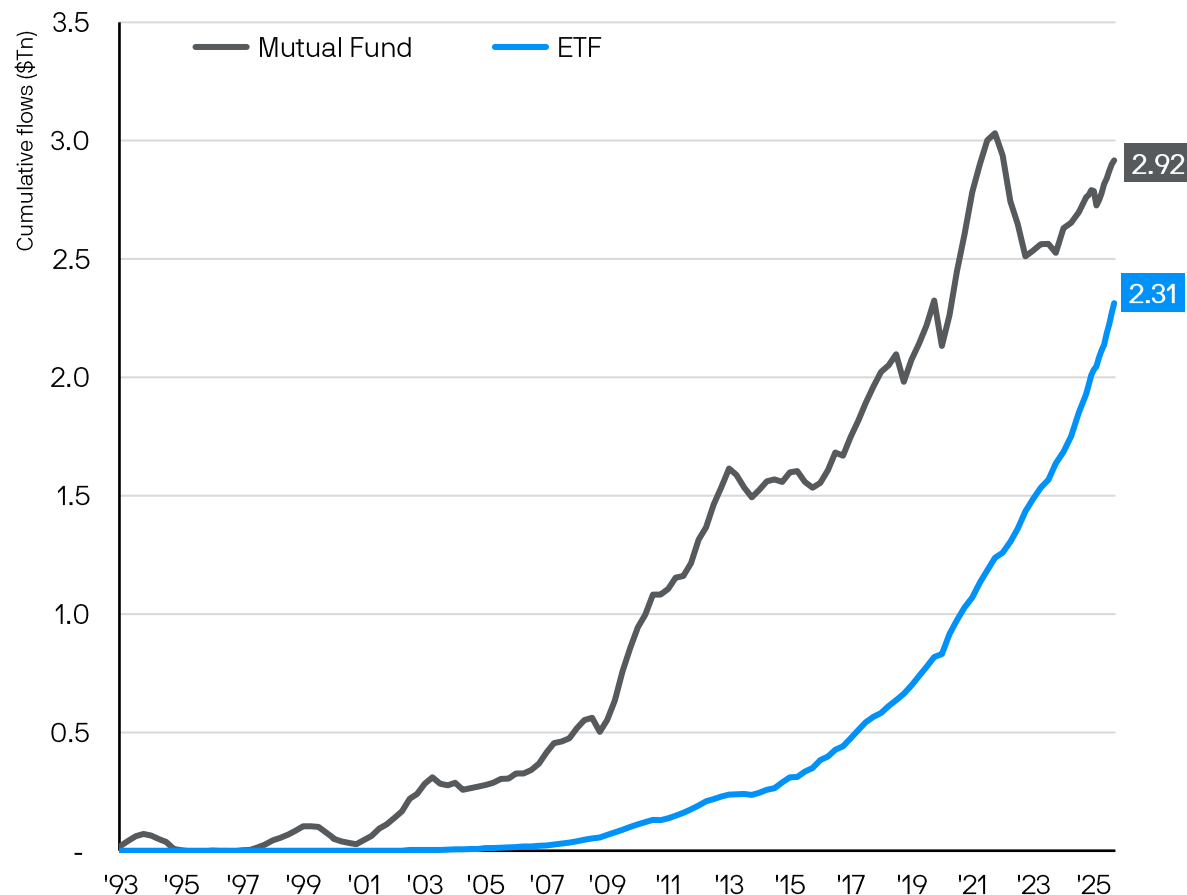
Source: Bloomberg, J.P. Morgan Asset Management. Flow percentages are percentages of total active U.S. ETF flows for the year and total percentages will likely not sum to 100% given not all active categories are represented in the chart. \*Total flows of the selected categories. Guide to ETFs – U.S. Data as of December 31, 2025.



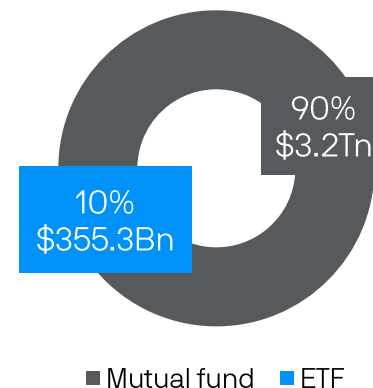
# Fixed income flows and AUM, by vehicle

GTE U.S. 22

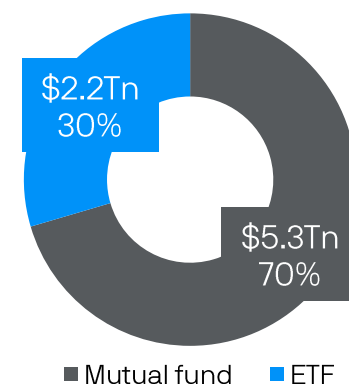
Fixed income ETF flows and AUM are steadily increasing



Fixed income total AUM  
2015



Fixed income total AUM  
2025



Source: Morningstar, J.P. Morgan Asset Management. Data as of November 30, 2025.  
Guide to ETFs – U.S. Data as of December 31, 2025.

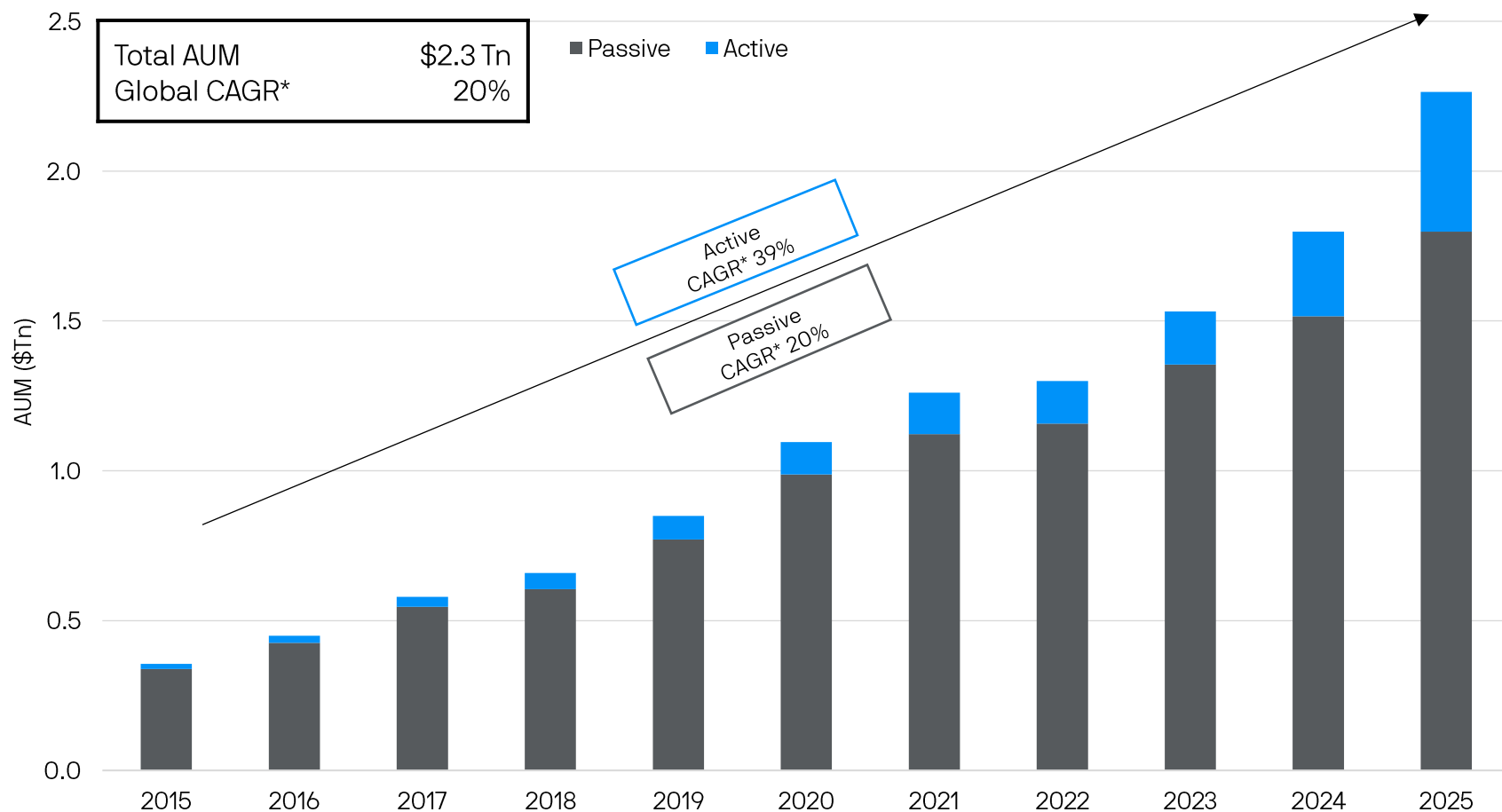
**J.P.Morgan**  
ASSET MANAGEMENT



# Active fixed income gaining adoption

GTE U.S. 23

Fixed Income Ecosystem



Source: Bloomberg, FactSet, J.P. Morgan Asset Management. US ETFs only. \*Compound annual growth rate (CAGR).  
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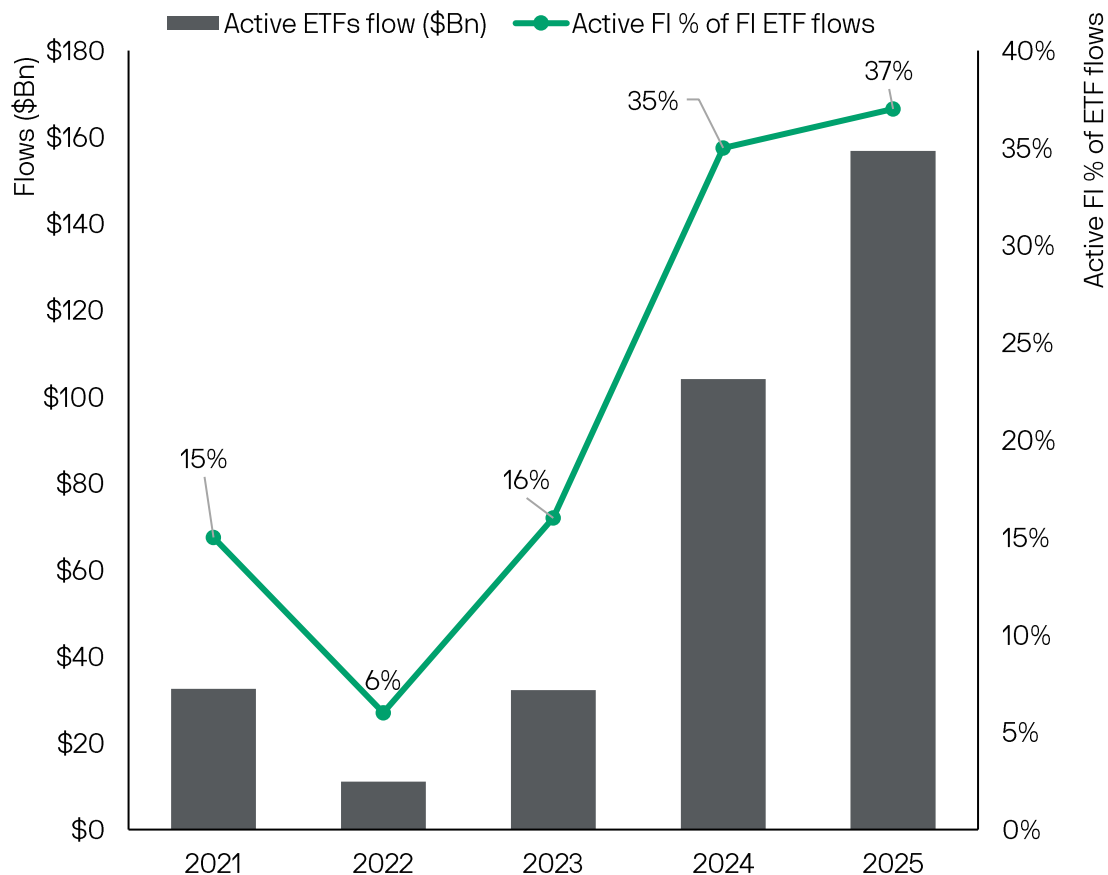
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# Active U.S. fixed income ETF flows

GTE U.S. 24

## Active U.S. fixed income (FI) ETF flows



## Industry flows by category (\$Mn)

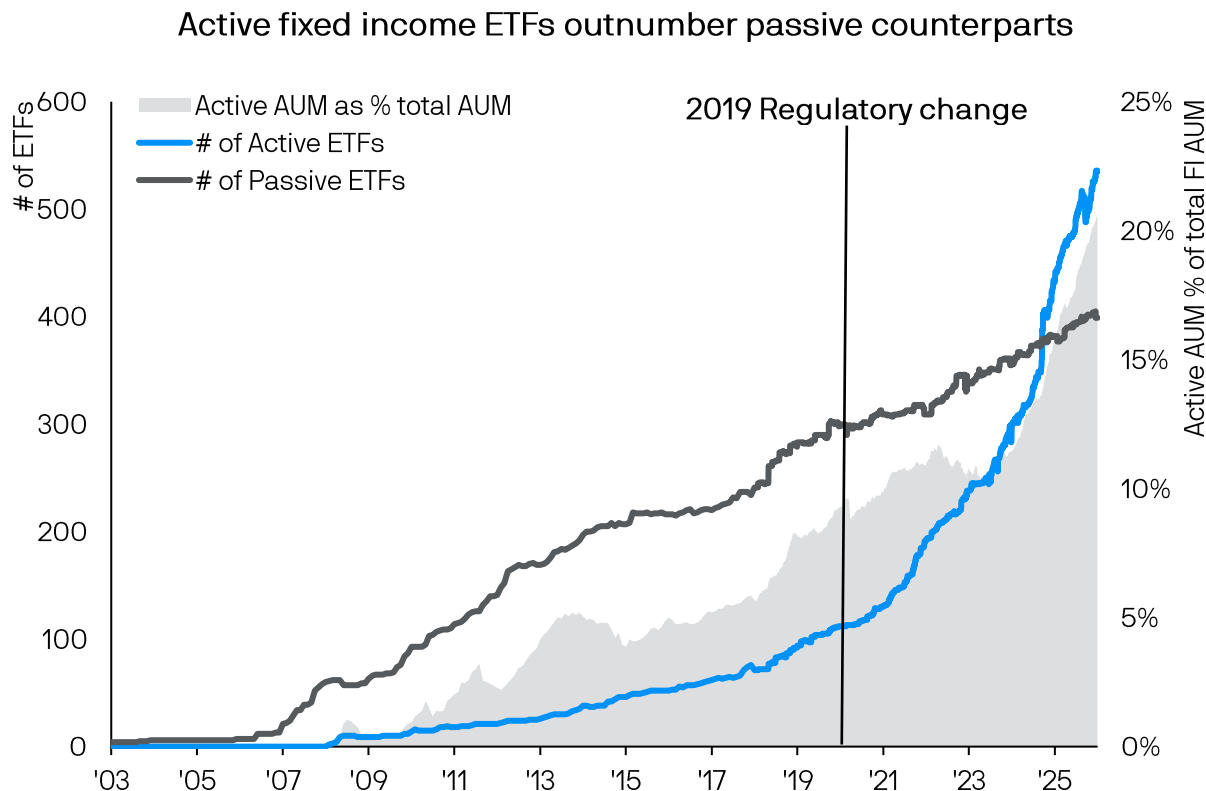
Category	YTD flow	% of flows YTD	AUM
Multisector Bond	25,753	14%	43,208
Ultrashort Bond	24,840	14%	105,019
Intermediate Core-Plus Bond	22,610	12%	74,181
Intermediate-Term Bond	16,441	9%	45,556
Securitized Bond - Focused	14,841	8%	37,230
Short-Term Bond	9,999	5%	24,855
Muni National Interim	9,795	5%	23,132
Muni National Short	5,846	3%	12,723
High Yield Muni	4,858	3%	8,915
Securitized Bond - Diversified	3,993	2%	7,367



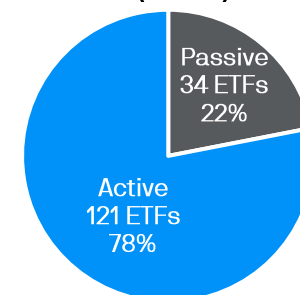


# Turning point in the fixed income ETF market

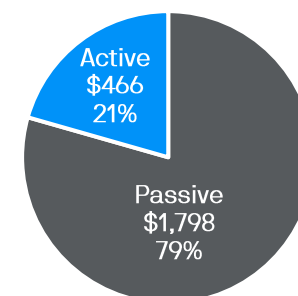
GTE U.S. 25



Fixed income ETF launches (TTM\*)



Fixed income AUM (\$Bn)





# Growth runway for active ETFs in fixed income

GTE U.S. 26

49% of the \$58 trillion U.S. bond market is not captured by the Bloomberg U.S. Aggregate Index

Fixed Income Ecosystem

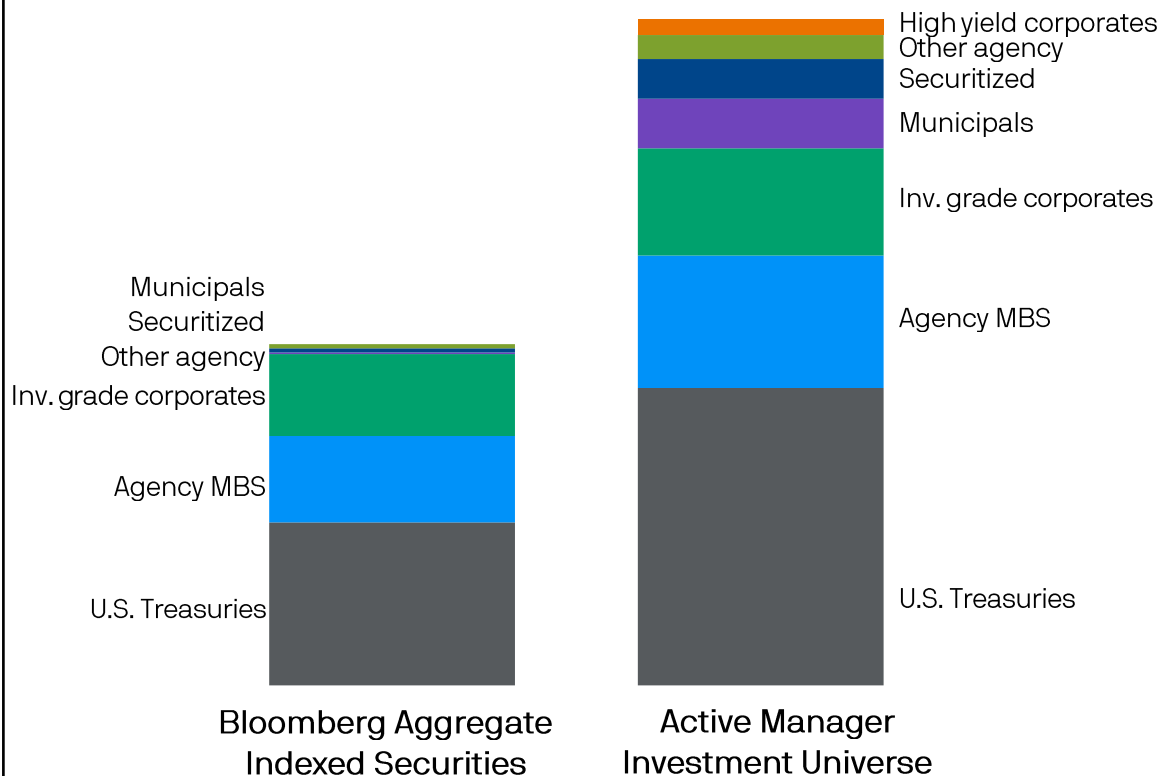
**\$145 Trillion**  
Global Fixed Income Market

**3Mn**  
Unique Bonds

VS.

**\$125 Trillion**  
Global Equity Market

**55K**  
securities



Source: Left- SIFMA as of July 28, 2025. World Federation of Exchanges as of July 2025. Right: Bank of America, Bloomberg, SIFMA, J.P. Asset Management as of July 2025.  
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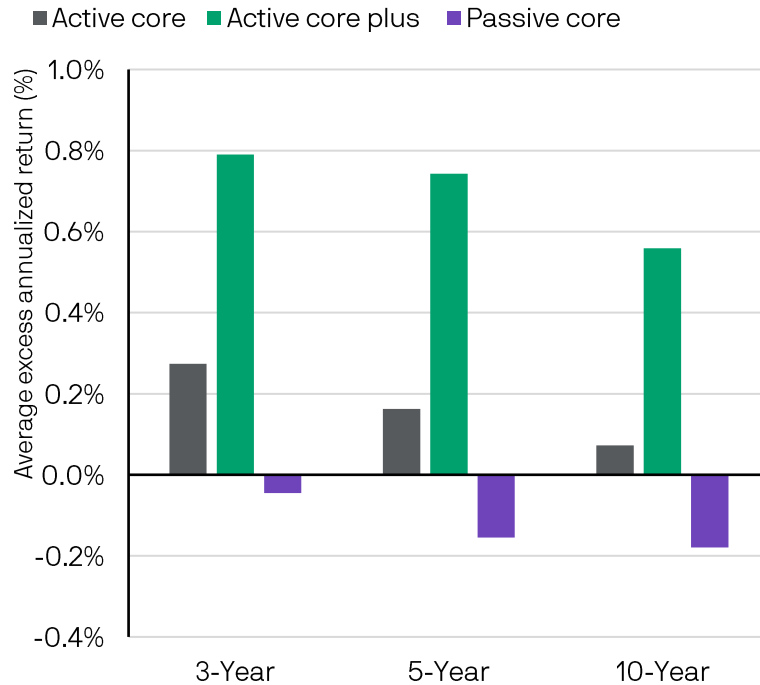


# Active fixed income managers outperform their passive peers

GTE U.S. 27

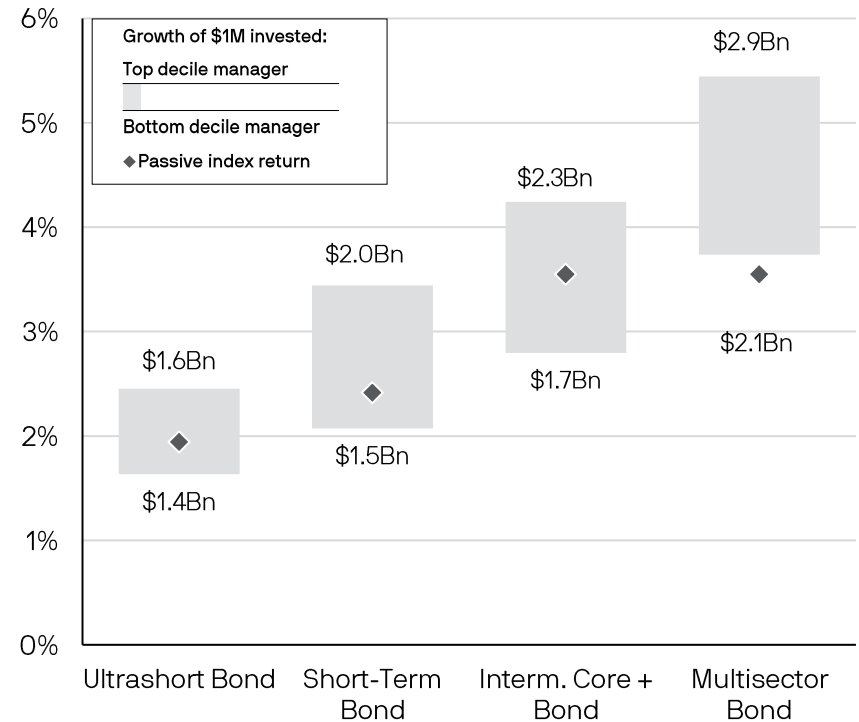
## Active typically outperforms passive

Average excess annualized returns over the Bloomberg U.S. Aggregate Bond Index



## Wide dispersion among top and bottom managers

20-year manager return dispersion and growth of capital  
(By asset type, annualized total returns, growth of \$1M invested 20 years ago\*)

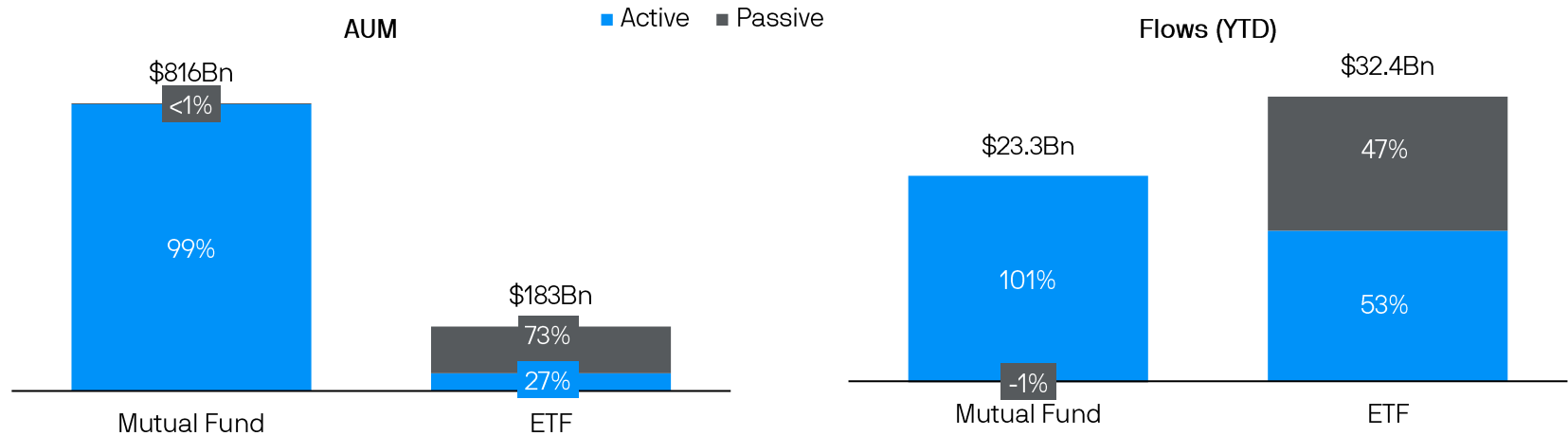


LHS: Morningstar, J.P. Morgan Asset Management analysis; charts reflect the most recently available data as of November 30, 2025. Analysis includes mutual funds and ETFs in the Morningstar intermediate core and intermediate core plus categories with a primary prospectus benchmark of the Bloomberg US Aggregate Bond Index. Only includes oldest share class. Past performance is not indicative of future returns. Core bonds typically hold less than 5% in below investment grade debt. RHS Source: Morningstar, J.P. Morgan Asset Management. \*Represents average annual portfolio return dispersion between the 10th and 90th percentile over a 20-year period for each Morningstar Category, including mutual funds and ETFs. Returns are updated monthly and reflect data through December 31, 2025. This information is for illustrative purposes only, does not reflect actual investment results, is not a guarantee of future results and is not a recommendation. \*\*Ultrashort Bond: Bloomberg Govt/Corp 1 Yr Duration Index, Short-Term Bond: Bloomberg 1-3 Yr U.S. Govt/Credit Total Return Index, Intermediate Core Plus Bond: Bloomberg U.S. Universal Total Return Index, Multisector Bond: Bloomberg U.S. Universal Total Return Index. Guide to ETFs – U.S. Data as of December 31, 2025.

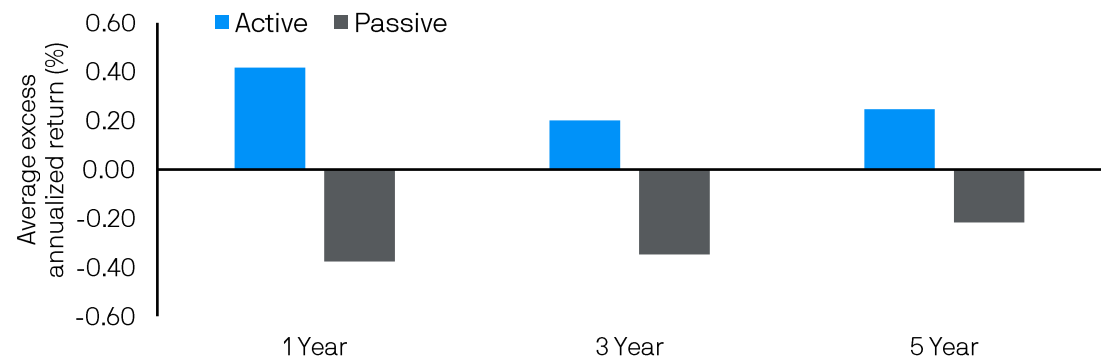


# Muni ETF growth – the trend is active

## Municipal AUM and flows, by vehicle



## Active intermediate municipal managers have delivered outperformance



## Top 5 active municipal ETF issuers

Firm	AUM (\$Bn)	% of YTD flows
JPMorgan	13.5	36%
Capital Group	8.2	22%
BlackRock	4.6	9%
Franklin Templeton	4.5	4%
AllianceBernstein	4.0	4%

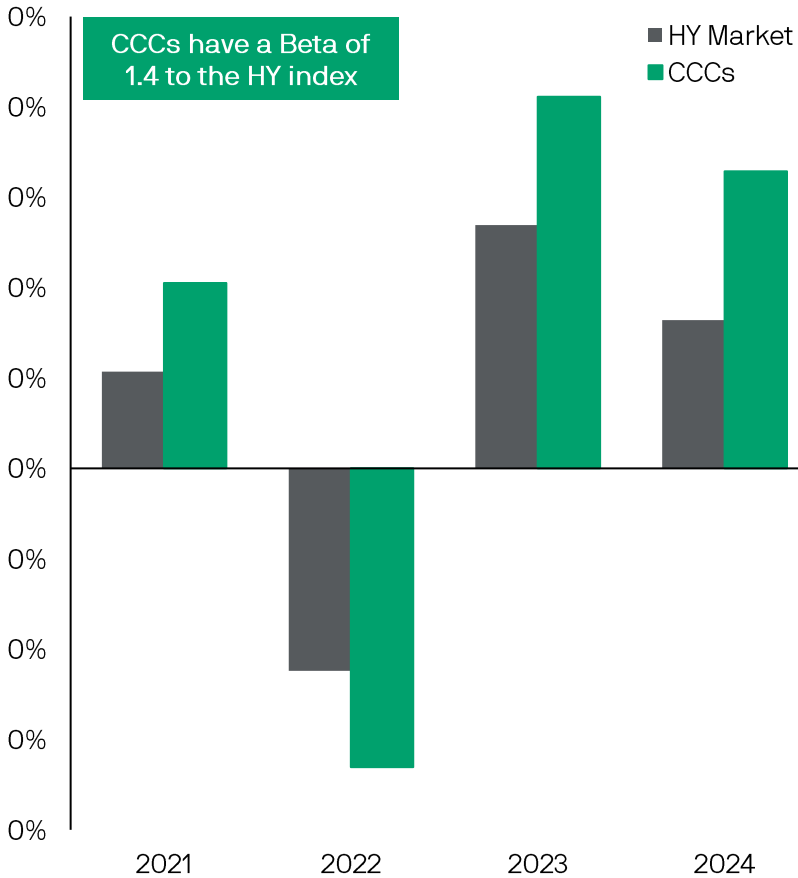
Source: Morningstar, J.P. Morgan Asset Management. Bottom left chart: Morningstar, J.P. Morgan Asset Management analysis; charts reflect the most recently available data as of November 30, 2025. Analysis includes mutual funds and ETFs in the Morningstar Intermediate Municipal category with a primary prospectus benchmark of the Bloomberg Municipal Bond Index. Only includes oldest share class. Past performance is not indicative of future returns.  
Guide to ETFs – U.S. Data as of December 31, 2025.



# Navigating risk in the high yield market

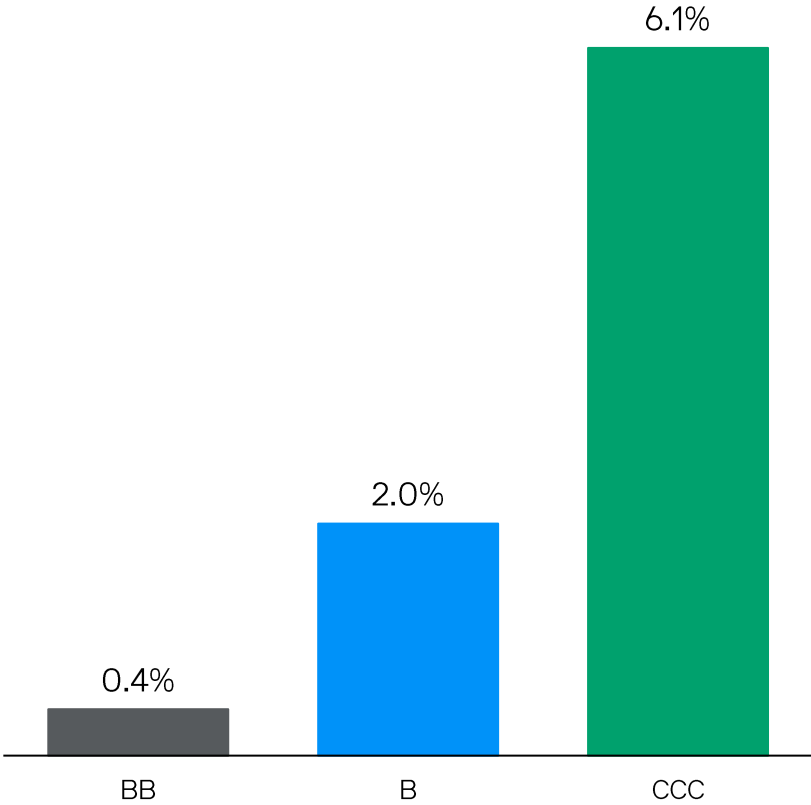
## CCCs returns are volatile

Calendar year returns



## Elevated default risks in CCCs

Default rates by rating – 12 months prior to default. 23-year average



Source: Left side: ICE; ICE BofA US High Yield Constrained Index and ICE BofA CCC and Lower US High Yield Constrained Index. Right side: JPMorganChase Commercial & Investment Bank (CIB). All data as of December 31, 2024. Guide to ETFs – U.S. Data as of December 31, 2025.



# Top 10 industry leaders

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## Overall ETF leaders by YTD net flows (\$Mn)

Issuer	AUM	YTD flow	1Y flow	1M flow	2025 Organic growth rate	Total products/ last 12M
1 Vanguard	3,867,536	417,951	417,951	61,094	14%	103 / 15
2 BlackRock	4,007,191	381,664	381,664	76,513	12%	468 / 37
3 SPDR	1,837,515	84,741	84,741	22,500	6%	176 / 18
4 Invesco	803,216	72,720	72,720	12,526	12%	238 / 12
5 JPMorgan	274,880	65,786	65,786	7,160	36%	69 / 6
6 Capital Group	107,377	47,210	47,210	4,922	96%	25 / 4
7 Schwab	494,596	44,945	44,945	8,030	11%	34 / 2
8 DFA	244,183	42,919	42,919	4,461	25%	41 / 0
9 Fidelity	148,777	29,380	29,380	3,647	27%	75 / 2
10 Avantis	94,087	26,971	26,971	2,812	50%	30 / 2
Other	1,565,956	260,566	260,566	26,613	24%	3,545 / 994
<b>TOTAL</b>	<b>13,445,315</b>	<b>1,469,413</b>	<b>1,469,413</b>	<b>229,358</b>	<b>14%</b>	<b>4,804 / 1,092</b>

## Industry flows by category (\$Mn)

Overall exposure	YTD flow	AUM
U.S. Equity	573,343	7,208,488
Taxable Bond	387,272	2,076,987
International Equity	221,543	1,920,427
Nontraditional Equity	76,564	248,279
Commodities	57,966	333,900
Sector Equity	57,369	1,126,799
Leveraged/Inverse	40,207	289,578
Municipal Bond	39,791	187,497
Allocation	6,898	36,060
Money Market	5,286	5,517
Other	3,174	11,783
<b>Total</b>	<b>1,469,413</b>	<b>13,445,315</b>

## Active ETF leaders by YTD net flows (\$Mn)

Issuer	AUM	YTD flow	1Y flow	1M flow	2025 Organic growth rate	Total products/ last 12M
1 JPMorgan	206,227	59,312	59,312	7,058	46%	44 / 6
2 Capital Group	107,377	47,210	47,210	4,922	96%	25 / 4
3 BlackRock	88,803	46,724	46,724	3,341	136%	66 / 22
4 DFA	244,183	42,919	42,919	4,461	25%	41 / 0
5 Avantis	94,087	26,971	26,971	2,812	50%	30 / 2
6 Fidelity	67,382	21,321	21,321	2,552	52%	40 / 1
7 PIMCO	40,125	14,278	14,278	1,489	56%	13 / 0
8 YieldMax ETFs	10,965	13,718	13,718	-495	167%	60 / 20
9 Neos LLC	17,894	13,167	13,167	1,922	309%	17 / 7
10 First Trust	98,366	12,938	12,938	1,632	16%	188 / 28
Other	531,298	175,181	175,181	13,887	59%	2,147 / 813
<b>TOTAL</b>	<b>1,506,943</b>	<b>473,271</b>	<b>473,271</b>	<b>43,599</b>	<b>53%</b>	<b>2,676 / 903</b>

## Industry flows by category (\$Mn)

Active exposure	YTD flow	AUM
Taxable Bond	140,918	428,929
U.S. Equity	119,260	465,626
Nontraditional Equity	73,447	225,814
International Equity	62,342	210,944
Municipal Bond	21,786	52,517
Leveraged/Inverse	21,612	40,451
Sector Equity	18,193	42,772
Allocation	5,616	15,357
Money Market	5,286	5,517
Alternative	2,946	9,458
Other	1,865	9,558
<b>Total</b>	<b>473,271</b>	<b>1,506,943</b>

Source: Bloomberg, FactSet, J.P. Morgan Asset Management. U.S. ETFs only; excludes ETNs. Leveraged/Inverse includes Inverse Equity, Leveraged Equity, Inverse Debt, Leveraged Debt, Leveraged Commodities, among others. The companies discussed are shown for illustrative purposes only. Their inclusion should not be interpreted as a recommendation to buy or sell. Organic growth rate calculated as YTD Flows / 2024 AUM.

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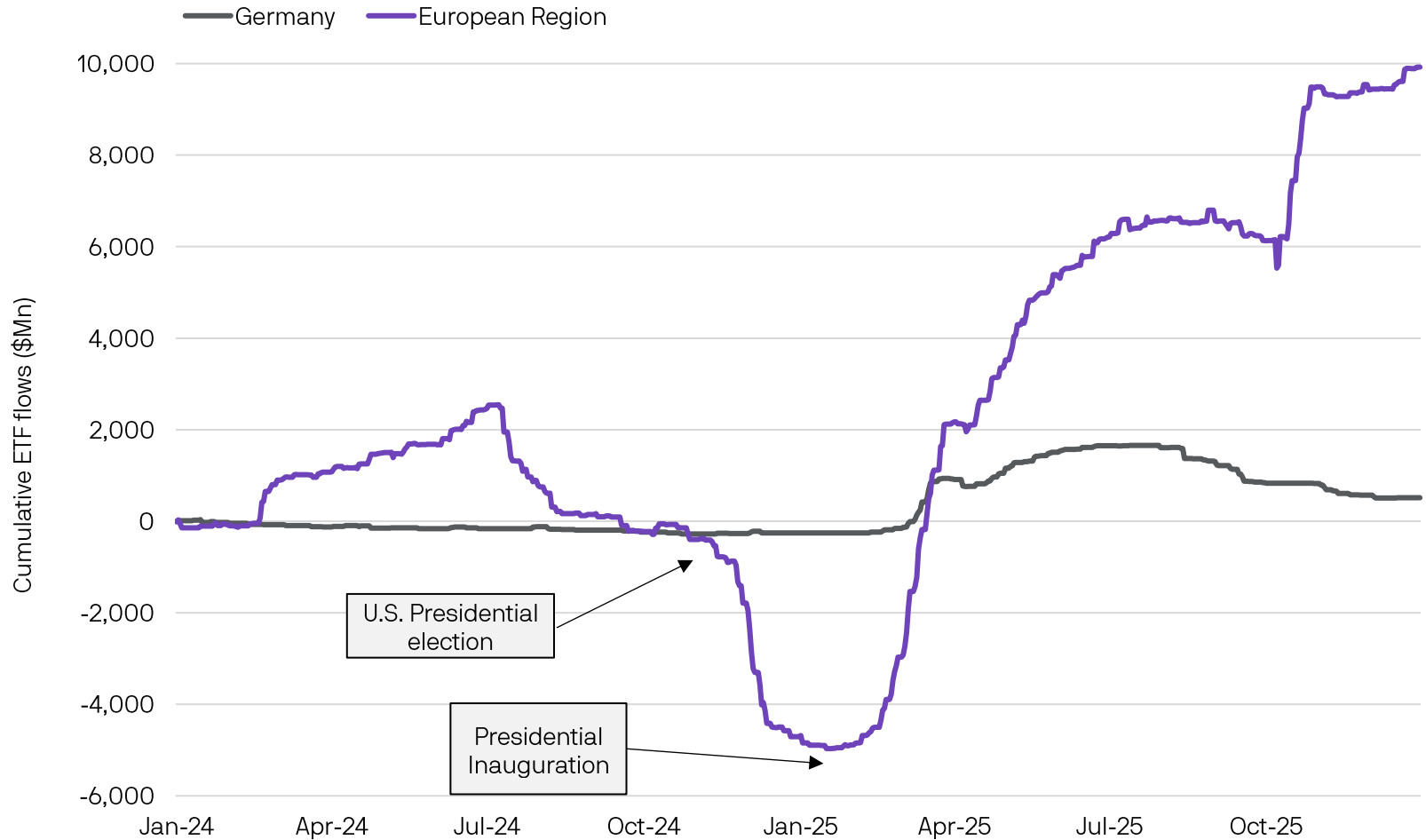
# A lens into investor sentiment by ETF flows

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## Resurgence of ETF flows into European ETFs



Trends

Source: Bloomberg, J.P. Morgan Asset Management. European and Germany ETFs as defined by geographic focus by Bloomberg. Guide to ETFs – U.S. Data as of December 31, 2025.

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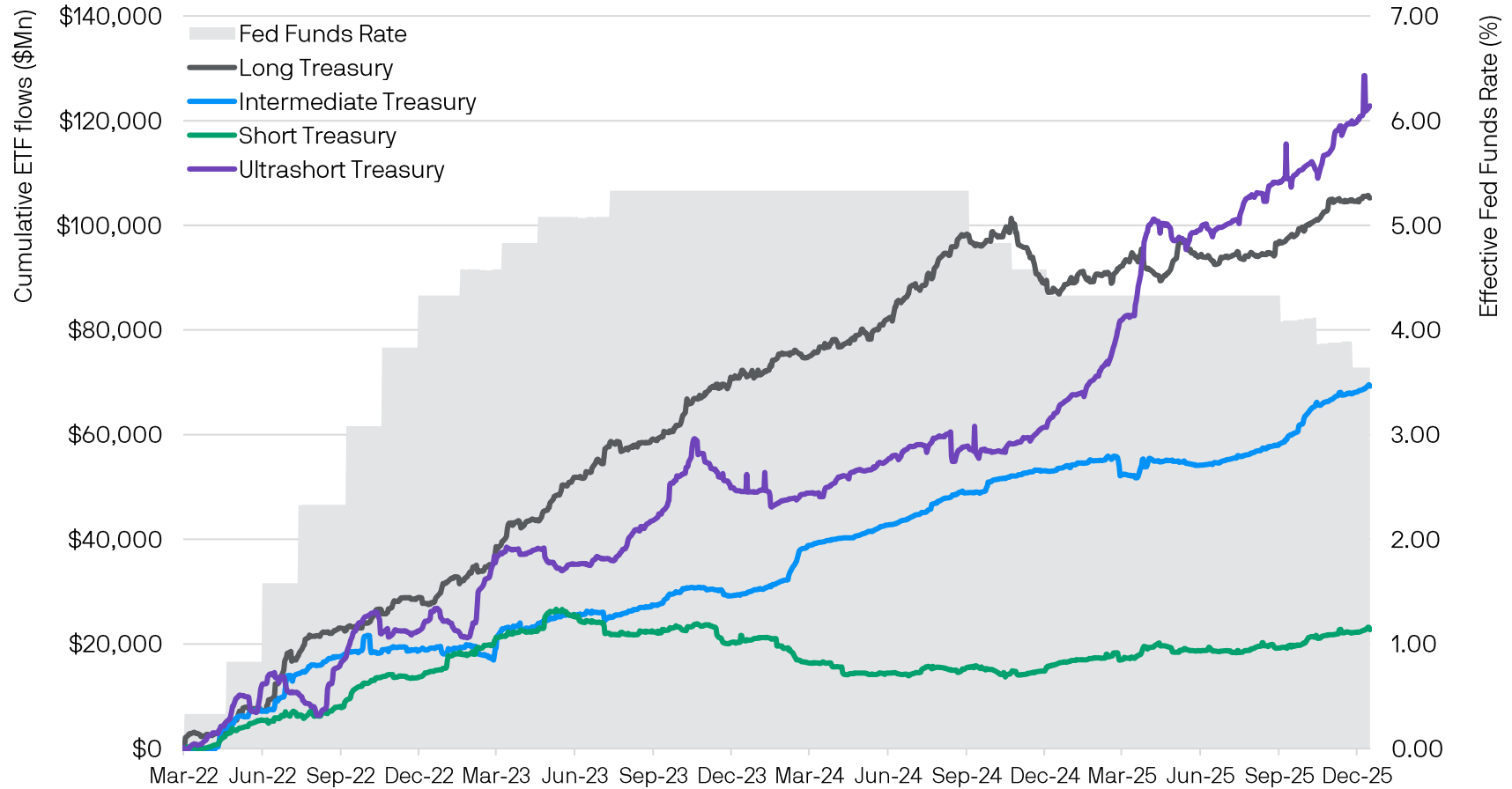
# Treasury ETF flows since the Fed's first rate increase

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ETF Treasury flows have favored the long end of the yield curve



Trends

Source: Bloomberg, J.P. Morgan Asset Management.  
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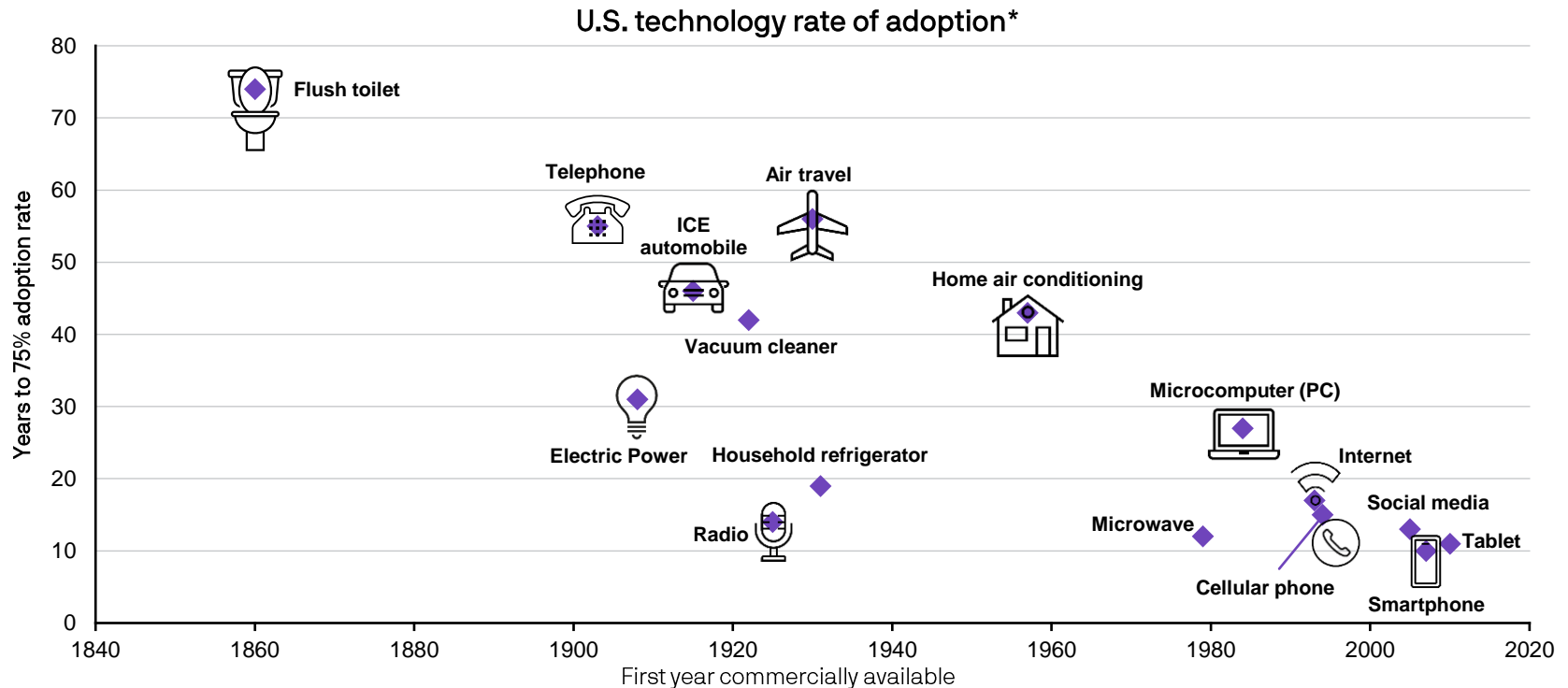




# Defining a theme

## Themes are:

- A disruption that alters a paradigm and assumes the future will differ from the past. Sector agnostic.
- Sector, geographically and market size agnostic – though leans toward mid to small cap.
- ETFs have democratized thematic investing to a certain extent, though it is limited to companies in the public domain.
- A concept begins as a theme and then becomes ubiquitous. Electricity, telephone, railroads were all transformative themes at one point.



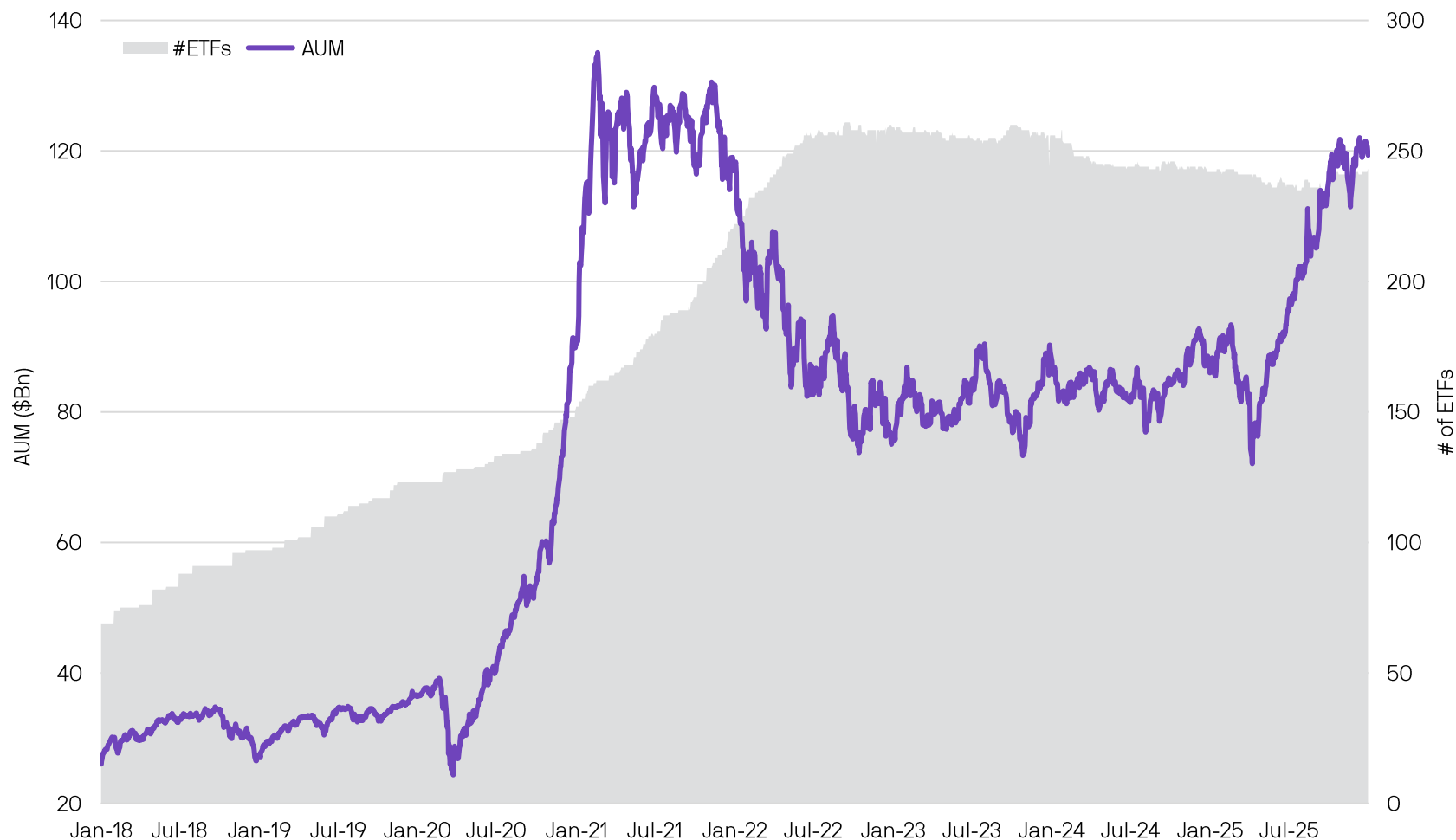
Source: Asymco, compiled from various sources with support of the Clayton Christensen Institute, J.P. Morgan Asset Management.  
\*Estimated from current adoption trends. Chart is exhibit 5 in "The transformative power of generative AI: Supercharged productivity or mass joblessness?" by J.P. Morgan Asset Management.  
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# The timeline of thematic ETF AUM

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## Thematic ETF Growth



Trends

Source: Bloomberg, J.P. Morgan Asset Management.  
Guide to ETFs – U.S. Data as of December 31, 2025.

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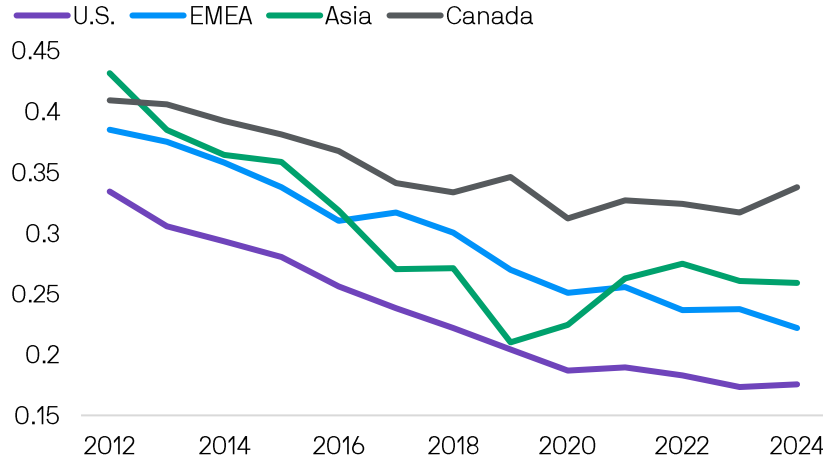


# Understanding ETF fees over time

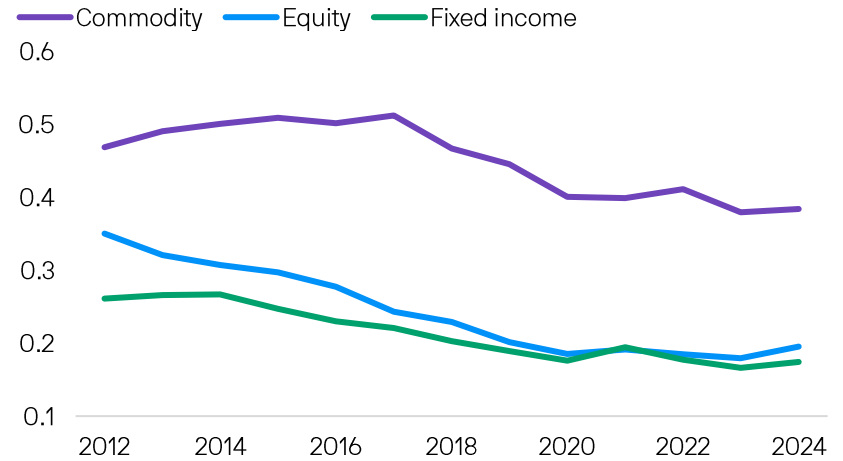
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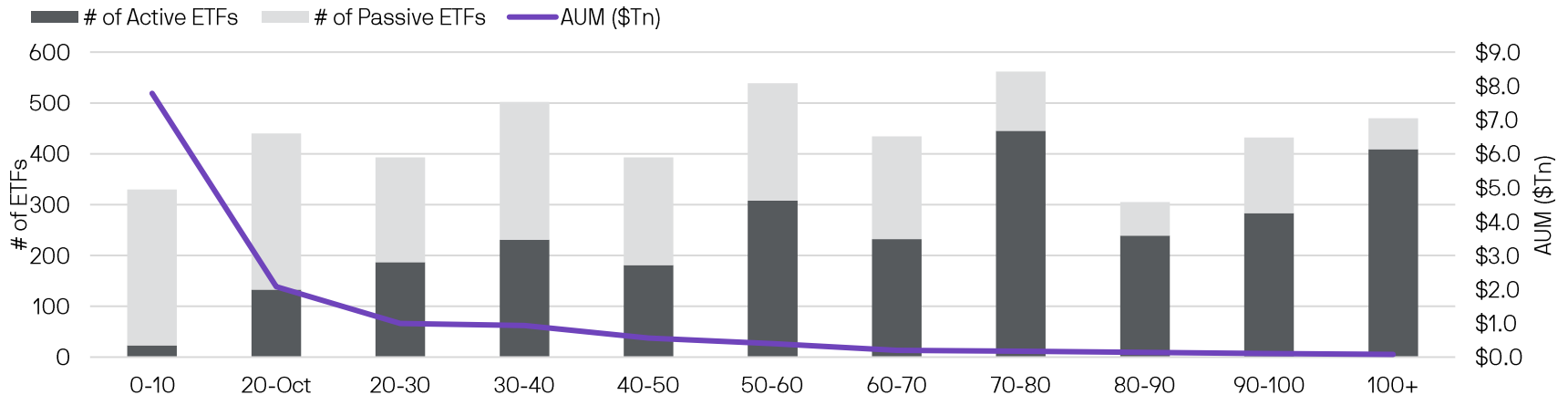
### AUM-weighted average fees, by region



### AUM-weighted average fees among global ETFs, by asset class



### U.S. ETF assets, by fee band



Source: Top left and right graphs: 2024 JPMorgan ETF Handbook; J.P. Morgan Quantitative and Derivatives Strategy, Bloomberg Finance L.P. Data points as of May of each respective year. Bottom graph: J.P. Morgan Asset Management, Bloomberg. Guide to ETFs – U.S. Data as of December 31, 2025.



# Why ETF model portfolios are on the rise

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## Benefits of models



Investment Management Expertise



Business Scalability



Diversification

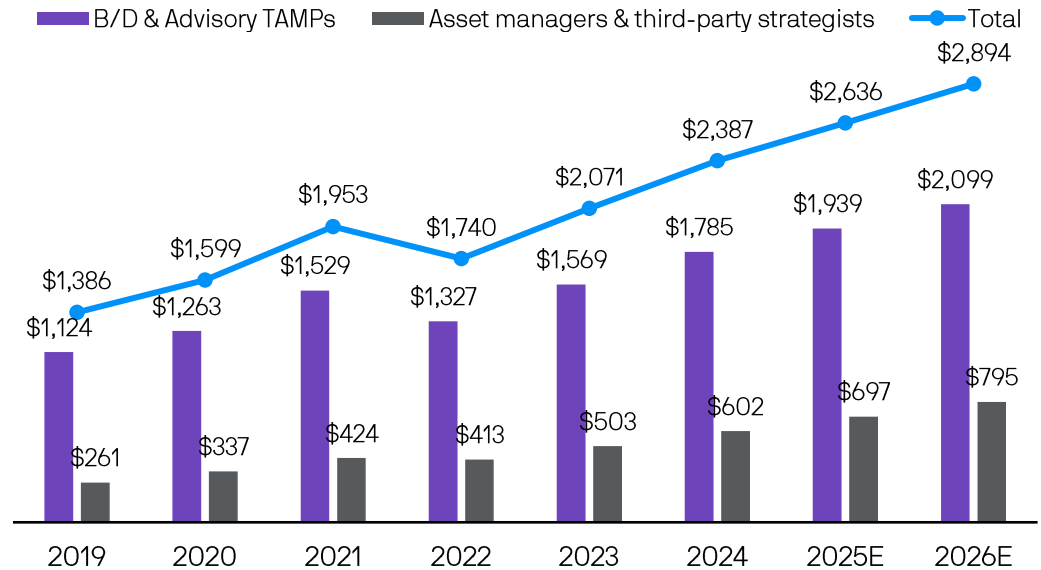


Time-saving

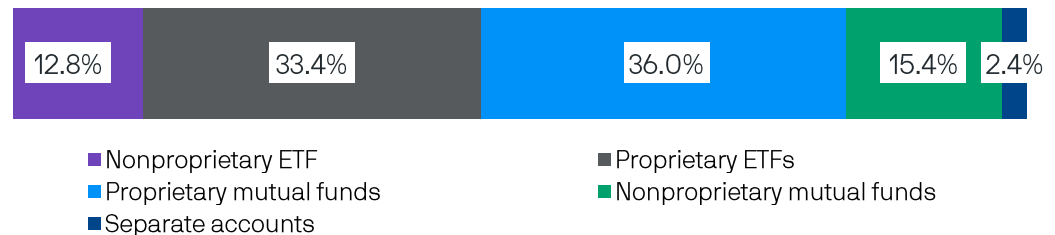


Due Diligence

## Asset allocation model portfolios asset projection, 2019 – 2026E



## Asset-weighted average model allocation to investment vehicle type



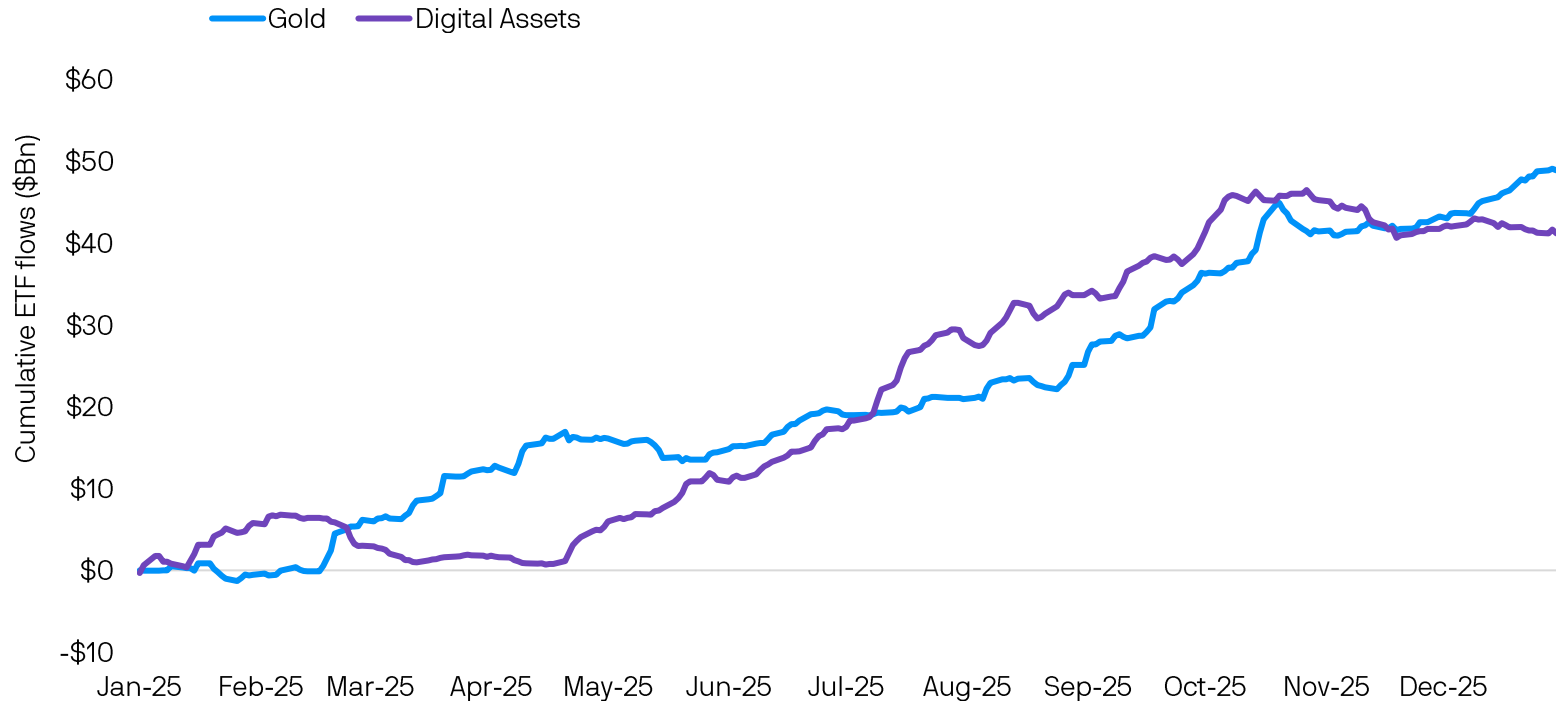
Source: J.P. Morgan Asset Management, Cerulli Associates, U.S. Asset Allocation Model Portfolios 2024. Bottom Right: Cerulli Associates, 2024. For illustrative purposes only.  
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# Digital currency and gold ETFs flows

## Currency flows in 2025



	January	February	March	April	May	June	July	August	September	October	November	December
Gold Monthly Flow	-531	6,691	6,186	3,679	-1,617	5,024	1,622	4,050	10,270	6,044	1,099	6,354
Digital Assets Monthly Flow	5,797	-2,734	-1,220	3,118	6,184	6,298	11,973	4,296	5,822	6,035	-3,339	-348

Source: Bloomberg, Morningstar, J.P. Morgan Asset Management. Digital Assets represented by all ETFs in the digital assets Morningstar category.  
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# Mutual fund to ETF conversions

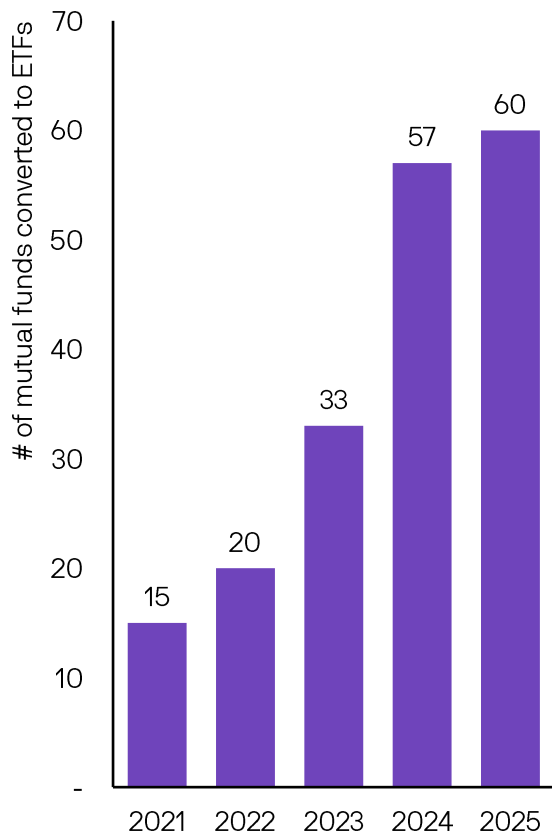
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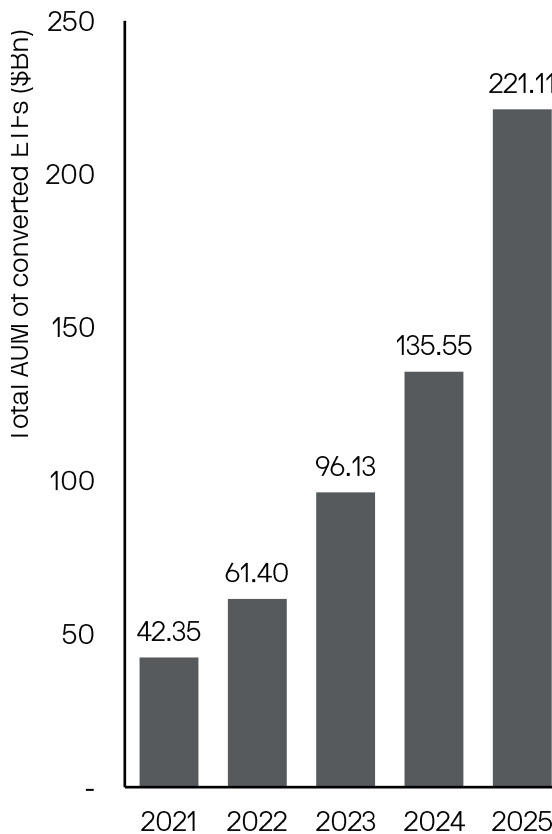
38

Trends

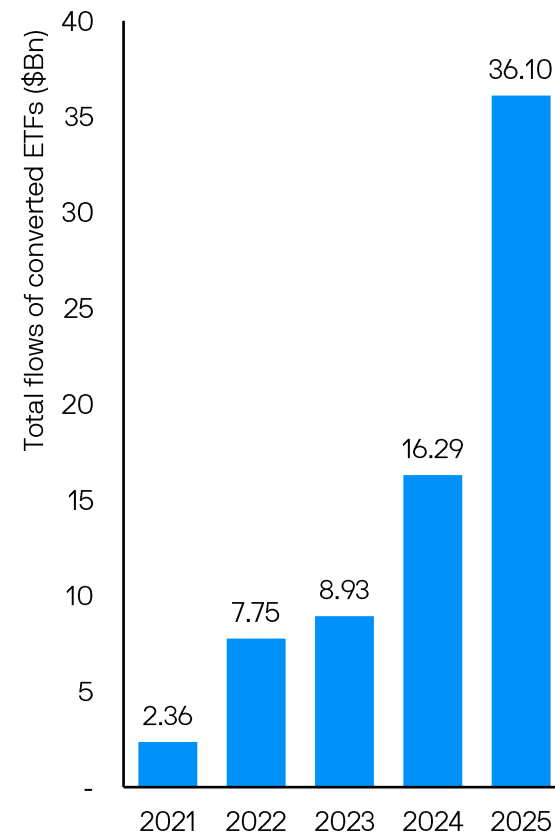
Mutual fund to ETF conversions, by year



Total assets in converted ETFs



Total flows into converted ETFs



Source: Morningstar, J.P. Morgan Asset Management.  
Guide to ETFs – U.S. Data as of December 31, 2025.



# Investment vehicle comparison

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	ETF	Mutual Fund	Separately Managed Account
<b>Diversification</b>	Broad portfolio typically has many stocks or bonds	Broad portfolio typically has many stocks or bonds	May be limited to the size of the account
<b>Tradability</b>	Can buy or sell shares on an exchange, throughout the day	Can buy or sell shares directly through the mutual fund company or brokerage account, at the end of the day	Can buy or sell assets directly through the management company, typically on a best-efforts basis
<b>Access to assets</b>	Throughout the day	End of day	Throughout the day
<b>Tax efficiency</b>	Capital gains are generally triggered by the individual when they sell their shares of the ETF	Capital gains are triggered by the fund manager as gains are realized through sell transactions inside the fund	Typically, capital gains or losses can be managed to investor's needs
<b>Fees</b>	Expense ratio, plus possible trading costs	Expense ratio, including 12b-1 fees, plus possible sales charge	Typically based on a percentage of account assets
<b>Direct ownership of securities</b>	No	No	Yes
<b>Portfolio customization</b>	No	No	Yes



# ETF characteristics and benefits

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## Transparent

- Daily holdings disclosure leads to more visibility of underlying securities, *better pricing during market stress and tighter spreads*



## Liquid

- Exchange trading provides *intra day liquidity*
- Constant bid/ask prices enhance *price discovery*, especially in illiquid market segments



## Cost-effective

- One fee structure, lower expense ratios and operational innovations translates to *lower costs* for investors



## Tax-efficient

- Secondary market activity assists in *lowering portfolio turnover*
- In-kind redemptions capabilities may help *reduce taxable trading activity*



## Accessible

- Provides access to diverse asset classes that may or may not be easily available to all investors, whether active or passive, with *no minimum investment thresholds*

Source: J.P. Morgan Asset Management. For illustrative purposes only. Investors must buy and sell units on a secondary market with the assistance of an intermediary (e.g. a stockbroker) and may incur fees for doing so. In addition, investors may pay more than the current net asset value when buying units and may receive less than the current net asset value when selling them. The tax treatment depends on the individual circumstances of each client and may be subject to change in the future.  
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# ETF transparency allows investors to know what they own

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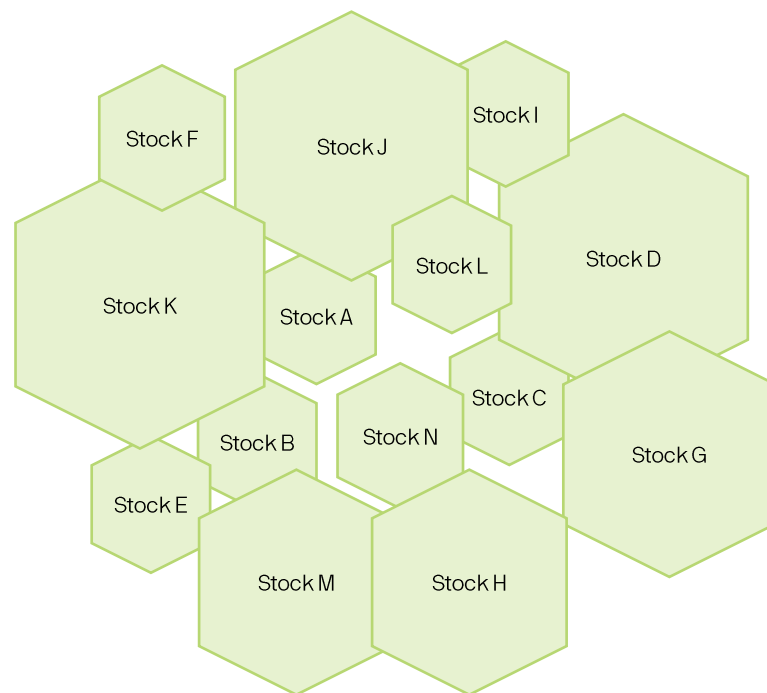
41

## ETF transparency allows:

- Better understanding of portfolio holdings/portfolio overlap
- Ability for daily performance attribution
- Tighter bid/offer spreads



## ETF





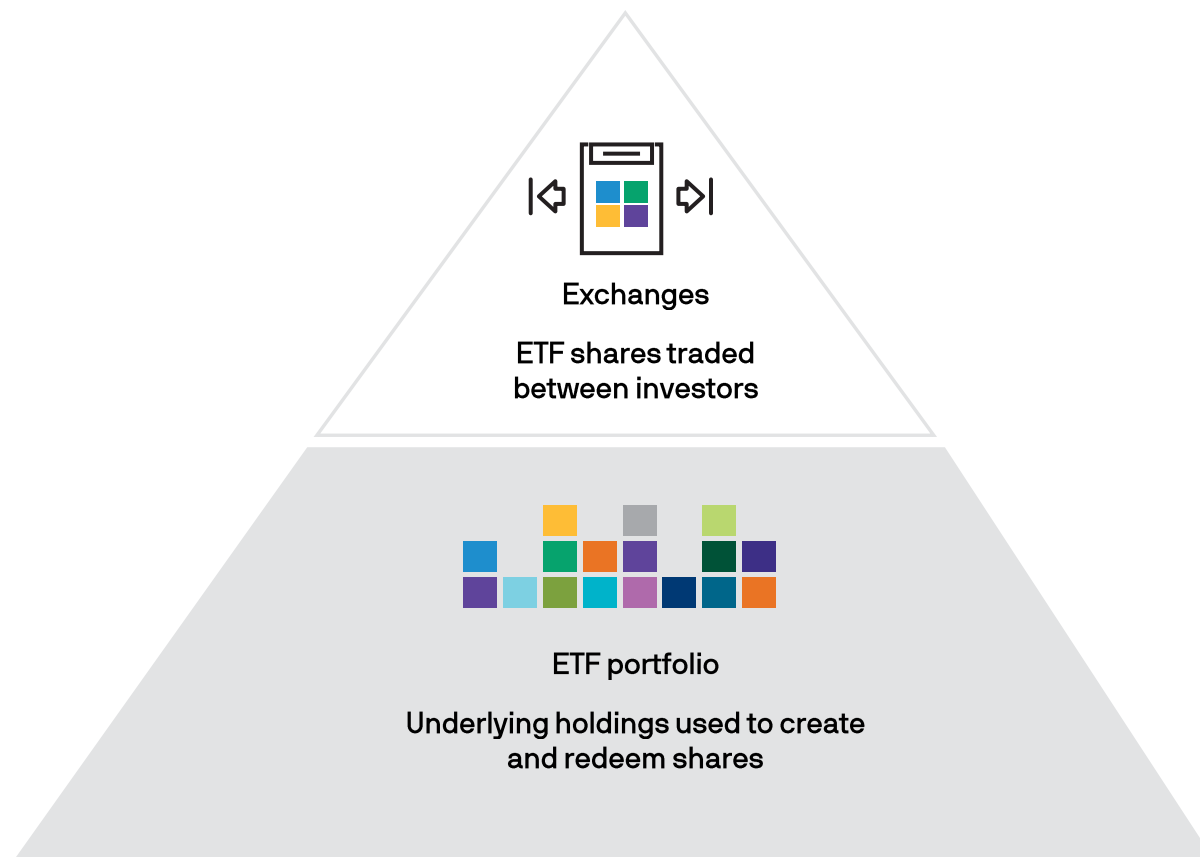
# ETFs offer more liquidity than meets the eye

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Morningstar U.S. active equity large cap value ETF category (73 active ETFs)



Average daily trading volume  
**\$4.6Mn**

+

Average daily trading volume  
**\$5.9Bn**

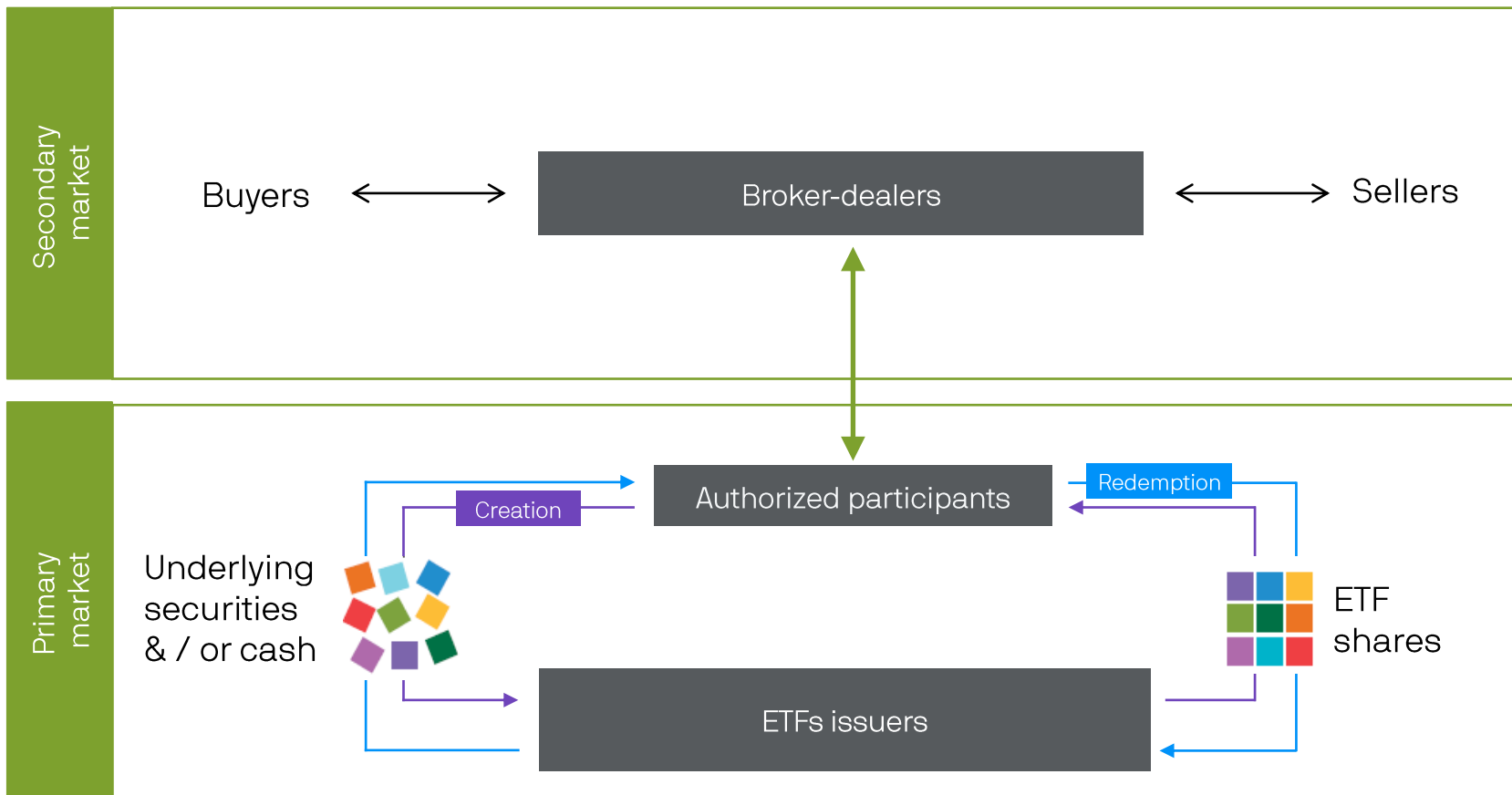
Source: Bloomberg, J.P. Morgan Asset Management; as of September 30, 2025. Top of the pyramid represents the average of the 3-month period average daily volume (ADV) for the 73 active ETFs in the category ending September 30, 2025. The bottom of the pyramid represents the average of the 3-month period ADV of the underlying baskets for the 73 active ETFs in the category ending September 30, 2025. For illustrative purposes only.

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# How liquidity is brought to investors

Creation and redemption process across active and passive ETFs

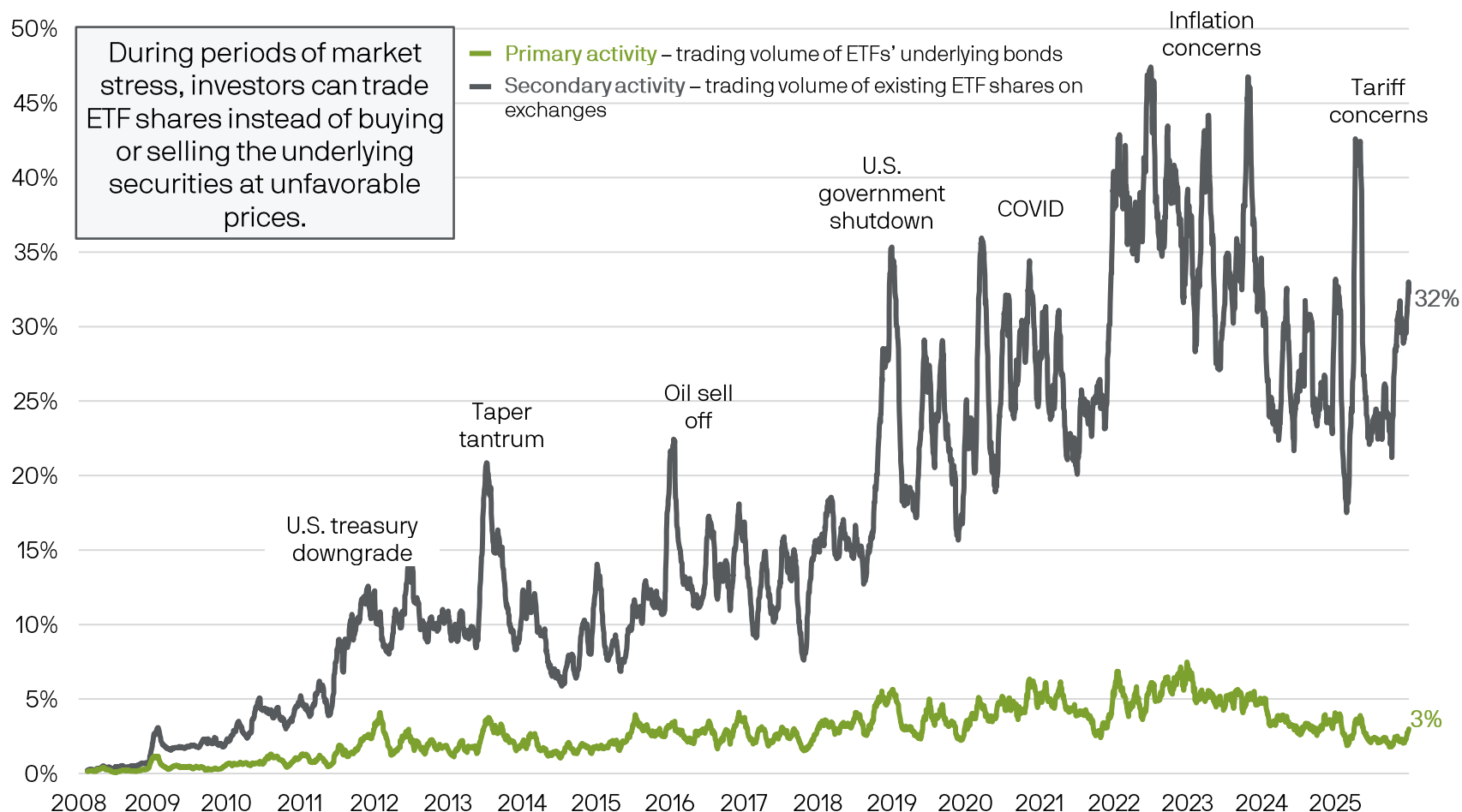




# Market stress highlights ETFs' liquidity powers

## High yield ETF trading volume in periods of market stress

Share (%) of 20-day rolling average trading volume of overall high yield bond market



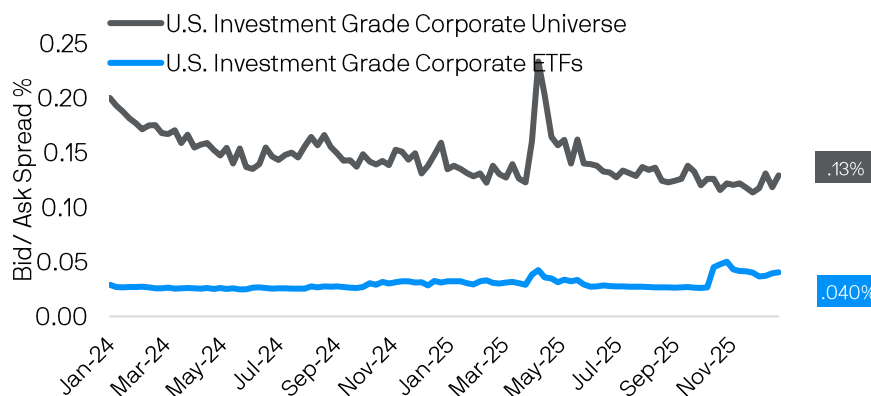
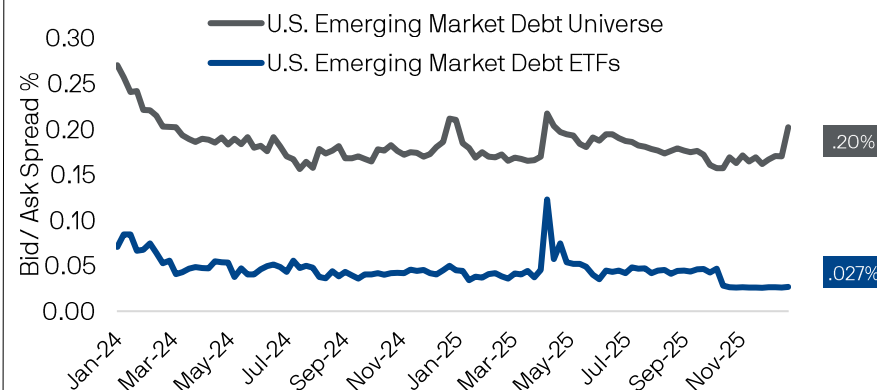
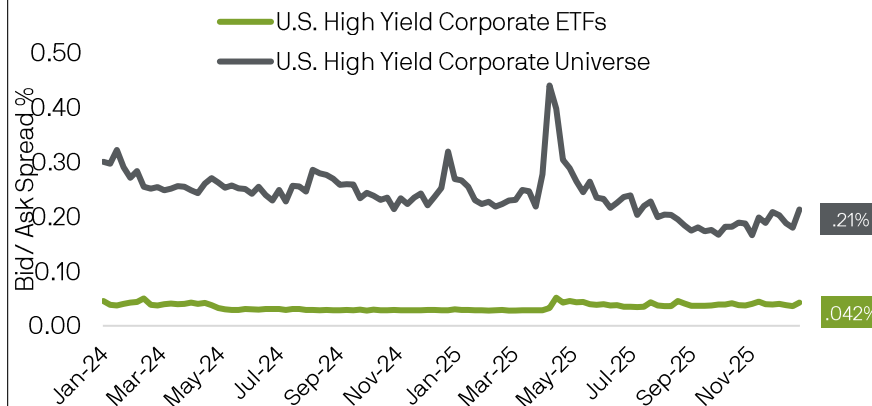
Source: Bloomberg, J.P. Morgan Asset Management. High yield ETF market is represented by HYG, JNK, PHB, HYL, SJNK, SHGY, USHY, HYL, ANGL, HYS, BSJL, BSJM, BSJK and BBHY. High yield bond market is represented by FINRA TRACE Market Breadth High Yield Bond Dollar Volume (NTMBHV) and FINRA TRACE 144a HY \$ Vol (NTMB4HYV).  
Guide to ETFs – U.S. Data as of December 31, 2025.



# Cost Benefits of ETFs

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ETFs historically have tighter spreads than the underlying bonds



Underlying high yield securities trade on average  
**6.9x wider** compared to overall ETF



Underlying emerging market securities trade on average  
**4.0x wider** compared to overall ETF



Underlying investment grade securities trade on average  
**4.8x wider** compared to overall ETF

Source: Bloomberg, MarketAxess, J.P. Morgan Asset Management. High Yield (HY) Corporate ETFs represented by the top 10 HY ETFs by AUM in the Morningstar High Yield category. Emerging Market Debt (EMD) Corporate ETFs represented by the top 5 EMD ETFs by AUM in the Morningstar EMD category. Investment Grade (IG) Corporate ETFs represented by the top 10 IG ETFs by AUM in the Morningstar IG category. Data as of 12/22/25.

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# Commons basket types used for creations and redemptions

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Under the ETF Rule (SEC 6c-11), issuers have the flexibility to publish up to 6 different baskets, to be used by Authorized Participants (AP) to create or redeem ETF shares, to meet specific business objectives. With the exception of the standard basket, the others are considered *custom baskets*.

## Standard

Required to be published every day. Can be pro-rata or optimized and may be used for creations or redemptions

## Create

Typically optimized to improve liquidity or minimize transaction costs

## Redeem

Typically optimized to improve liquidity, minimize transaction costs or to improve tax efficiency

## Rebalance

Typically used for more efficient portfolio rebalancing which can also lead to improved tax efficiency

## Restricted

Similar to a Rebalance basket, but often restricted to a single AP

## Negotiated

The only basket published intraday. Normally, an optimized basket of fixed income securities negotiated between AP and portfolio managers



# Negotiated basket workflow for fixed income ETFs

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## Creation example

### Market maker

1 Proposes a list of bonds in inventory or that they can easily source

4 Accepts or rejects proposed basket and can provide an alternative basket for consideration

Inventory

Proposed basket

### ETF portfolio manager

2 Determines which of those bonds fit in the portfolio based on pre-established criteria

3 Proposes a creation basket that combines cash and the selected bonds



Transaction often targets constant shape of the portfolio (duration, spread, sector)



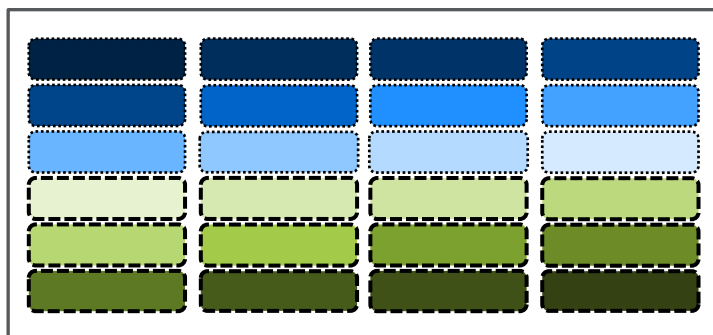
Technology often aids the negotiation process





# Enhanced tax efficiency through redemption baskets

The use of a redemption basket in lieu of a standard basket for primary market activity may lead to greater tax efficiency

Standard basket



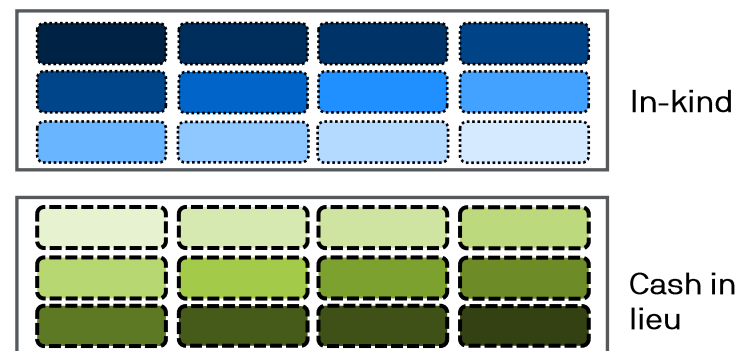
-  Securities with unrealized gains
-  Securities with unrealized losses

## Standard basket

- ❑ In-kind, pro-rata slice of the portfolio
- ❑ Cash component of the basket is minimized

Redemption basket

OR



## Redemption basket

- ❑ Issuer can in-kind out securities with unrealized gains
- ❑ Securities with losses can be sold for cash to crystallize losses and offset realized gains in the portfolio





# Tax efficiency spectrum across mutual funds and ETFs

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ETF wrapper allows for greater tax efficiencies than the mutual fund wrapper for two main reasons:

- ETFs trade on exchange, allowing shares to exchange hands without the need for trading the underlying portfolio
- ETFs that redeem in-kind can transfer securities out of the portfolio to meet the redemption, as opposed to having to sell holdings to raise cash



Potential for less capital gains

Potential for more capital gains

**Passive ETFs**

- + Trade on exchange
- + Lower portfolio turnover
- + Shares are often created / redeemed in-kind

**Active ETFs**

- + Trade on exchange
- Higher portfolio turnover
- + Shares are often created / redeemed in-kind

**Passive mutual funds**

- No exchange trading
- + Lower portfolio turnover
- Shares are created / redeemed in cash

**Active mutual funds**

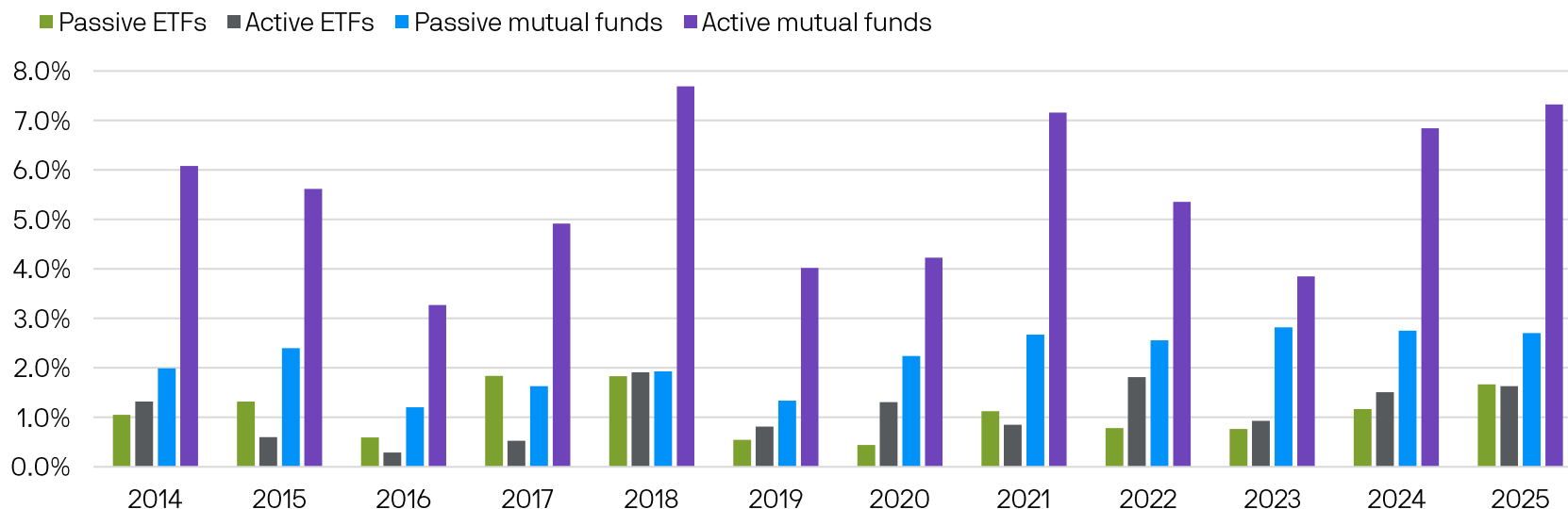
- No exchange trading
- Higher portfolio turnover
- Shares are created / redeemed in cash



# Percentage of funds paying capital gains in calendar year

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Weighted average of % capital gains / net asset value (NAV)



% of funds paying capital gains by year

Fund type	# of funds that paid capital gains in 2025	Total # of funds in 2025	% in 2025	% in 2024	% in 2023	% in 2022	% in 2021
Passive ETFs	81	2,092	4%	2%	1%	2%	8%
Active ETFs	212	2,632	8%	9%	5%	8%	14%
Passive mutual funds	171	449	38%	34%	24%	34%	54%
Active mutual funds	2,191	5154	43%	39%	29%	42%	62%

Source: Morningstar, J.P. Morgan Asset Management. Cost basis is the original purchase price used to determine capital gains and losses. Unrealized gain is the profit, if any, on a security that has not been sold (current price minus cost basis). Data as of December 31, 2025. Products are U.S. only.  
Guide to ETFs – U.S. Data as of December 31, 2025.

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# ETF trading considerations – a communication story

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Select order type that is suitable for your needs:

## Not-Held Order

***Gives trading authority to a broker or trading desk***

**Designed to:** Access trading experts, potential to engage in various trading methods, but communication could lead to delay in execution

**Appropriate for:** Orders that account for higher % of volume

## Limit Order

***Allows you to set the max and min price for buying/selling shares***

**Designed to:** Achieve desired price, but not guaranteed to complete

**Appropriate for:** Orders that account for lower % of volume

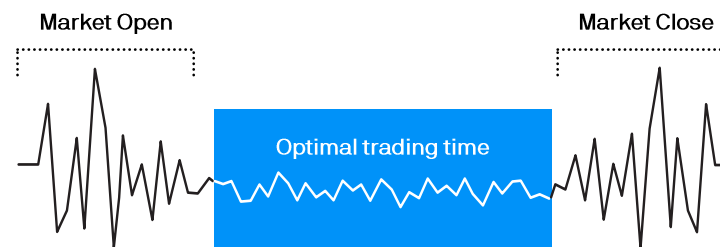
## Market Order

***A request to trade immediately at the best available price***

**Designed to:** Complete at any cost with potential impact to price

**Appropriate for:** Orders for share quantities smaller than displayed quantities

Tips to help avoid suboptimal trade execution:



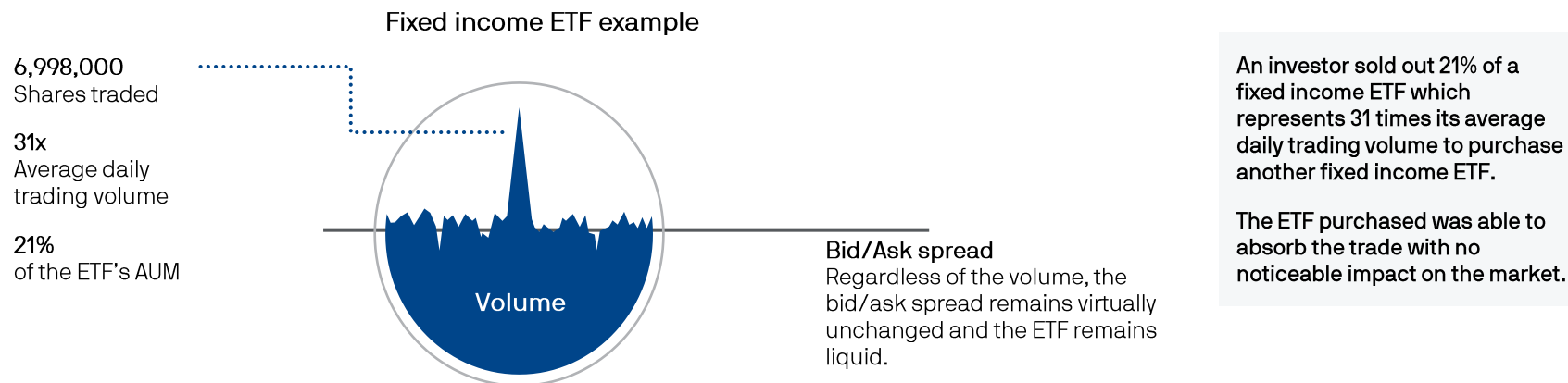
- Avoid trading during market open/close
- Additional liquidity may be had in foreign markets when those markets are open
- Be cognizant of holiday calendar globally, as well as economic release schedule
- Pay attention to the consistency of the secondary market volume for ETF shares



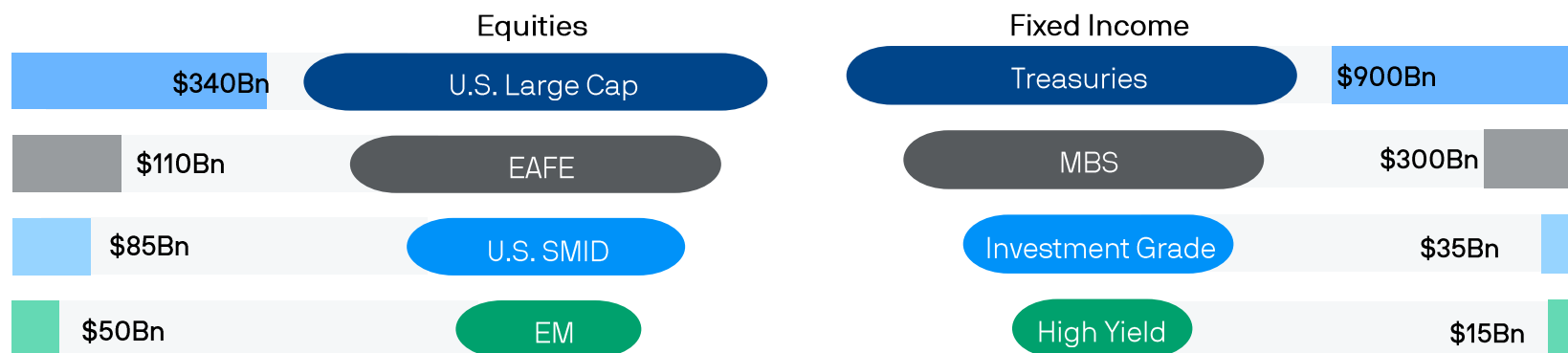
# Ability for ETFs to absorb large trades

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ETFs can move larger dollar amounts without moving markets when the underlined securities are leveraged to provide liquidity



Underlying liquidity\* of the asset class is an important component



Source: Top: Bloomberg, J.P. Morgan Asset Management; as of November 2023. The manager seeks to achieve the stated objectives. There can be no guarantee the objectives will be met. Bottom: Equities, Bloomberg, J.P. Morgan Asset Management; as of December 31, 2024. Fixed Income: SIFMA, J.P. Morgan Asset Management; as of December 31, 2024. For illustrative purposes only. \*Liquidity is represented by the average daily volume (ADV) of the asset class over the fourth quarter of 2024. Products are U.S. only.  
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## ETF total cost of ownership

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$$\text{Holding costs} + \text{Trading costs} = \text{Total cost of ownership}$$

+ Expense ratio/Fee

+ Portfolio turnover

— Securities lending

+ Trading commissions

+ Bid-ask spread

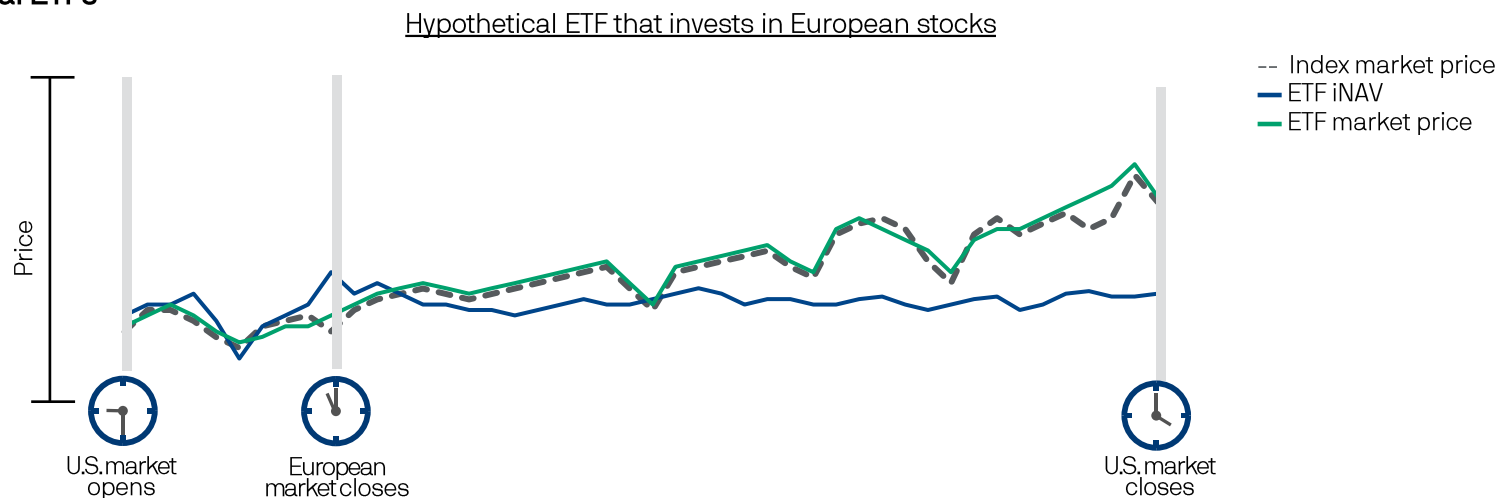
+ Tax impact

+ Adds to total costs    — Reduces total costs

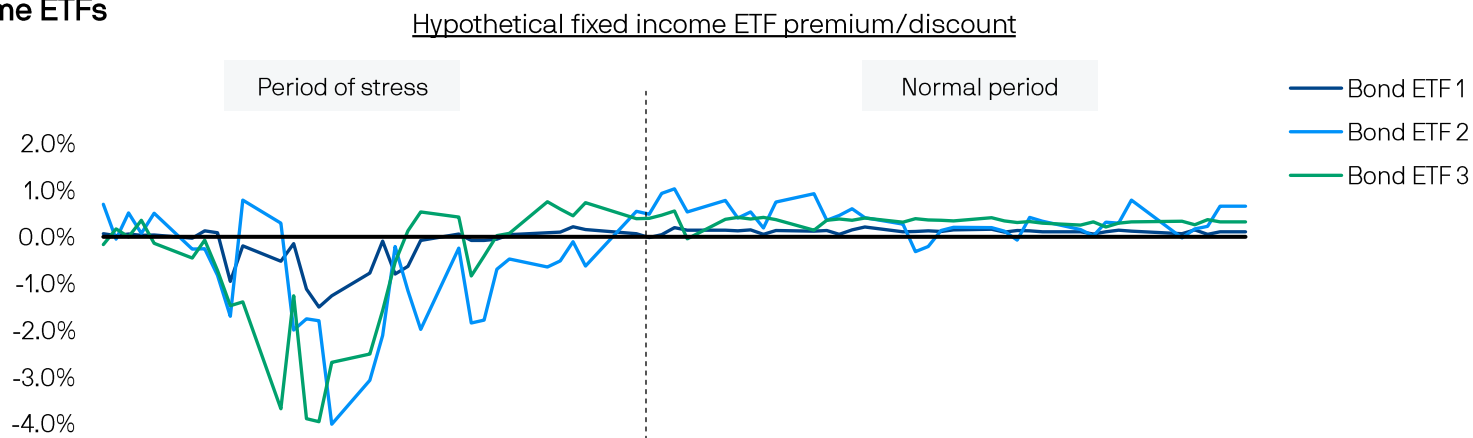


# ETF premiums and discounts

## International ETFs



## Fixed income ETFs





# J.P. Morgan Asset Management – Risks & disclosures

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