



Guide to ETFs

1Q 2026
As of December 31, 2025





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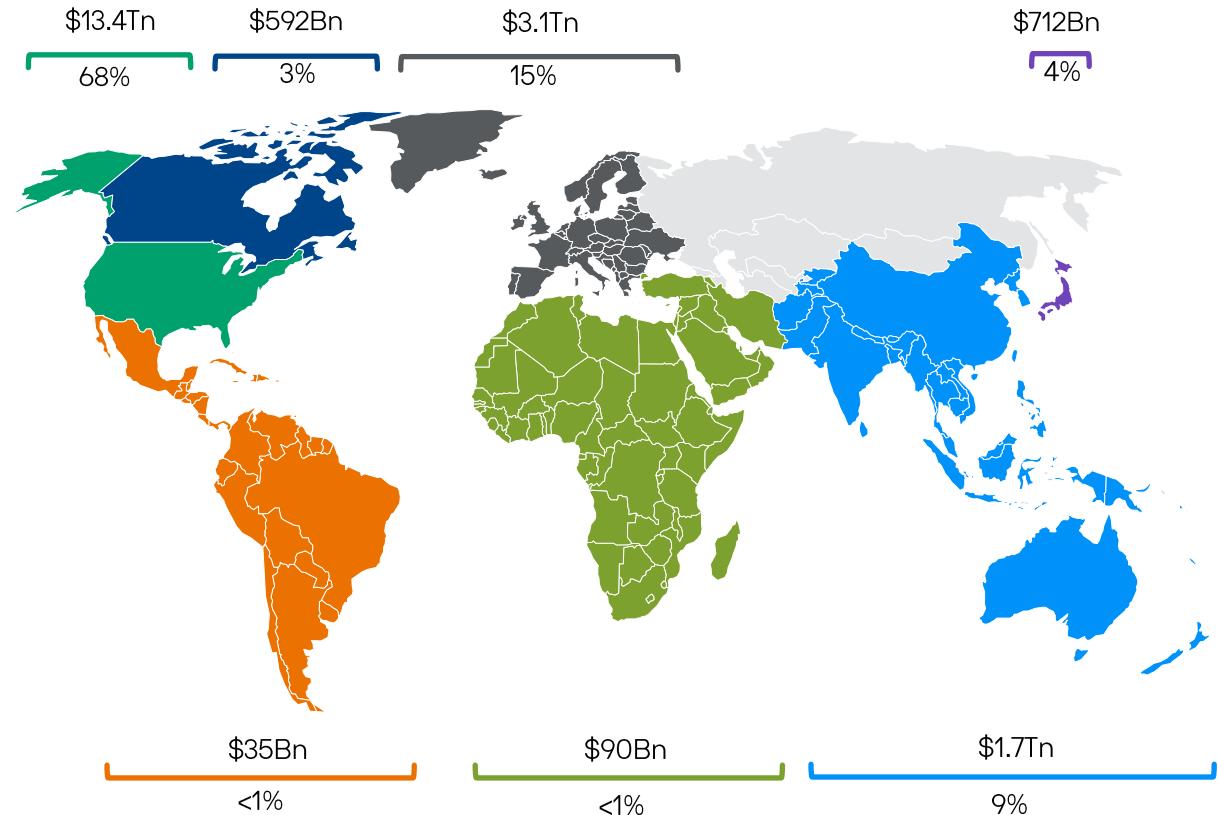
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Global ETF AUM by region

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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, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE, United States and Vietnam.
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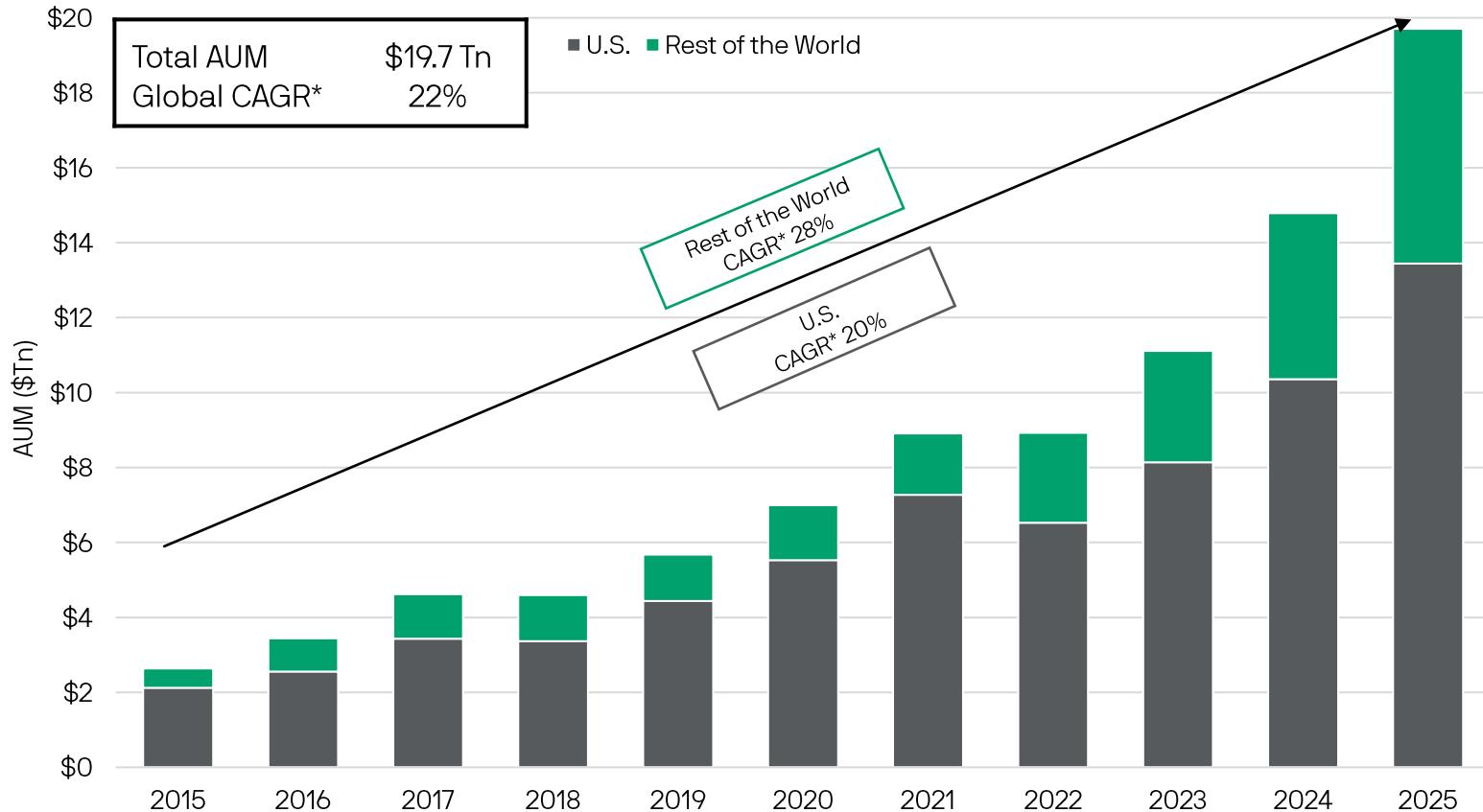
Global ETF AUM growth over time

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ETF Landscape



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, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, UAE and Vietnam. *Compound annual growth rate (CAGR).

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U.S. ETF market milestones

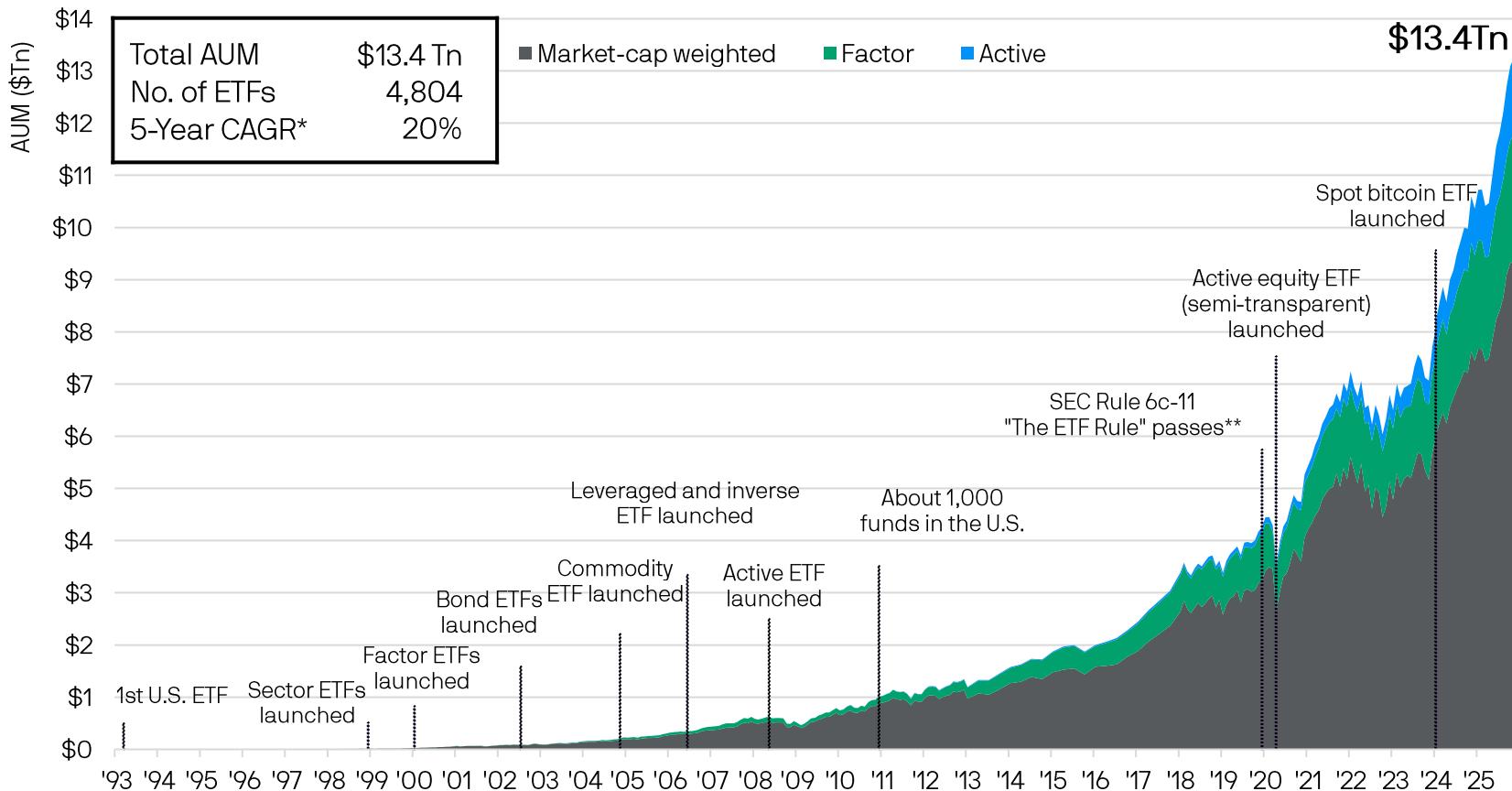
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ETF Landscape

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.
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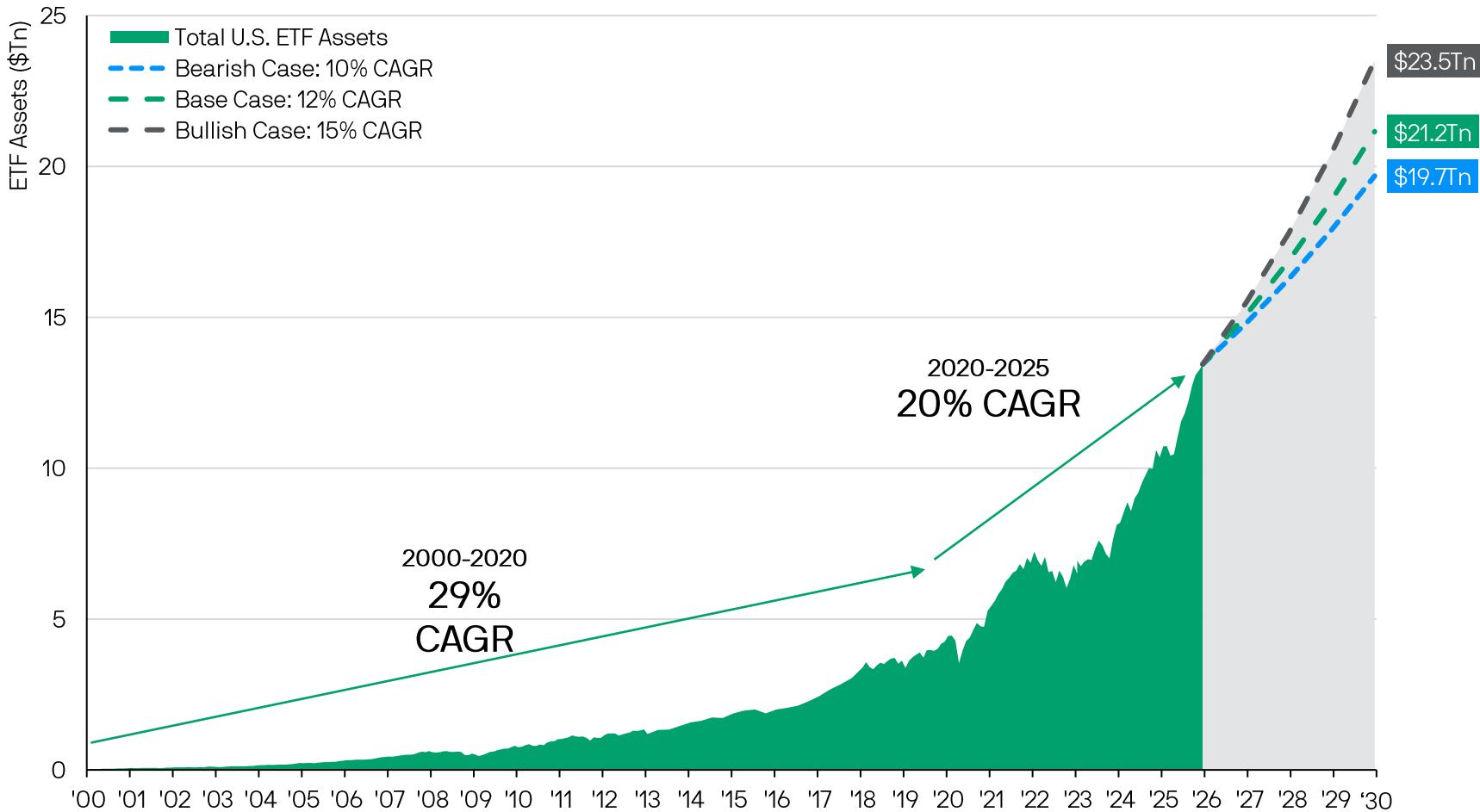
U.S. ETF assets projected to reach \$20 trillion by 2030

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ETF Landscape



Source: Bloomberg, J.P. Morgan Asset Management. Compound annual growth rate (CAGR).
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U.S. ETF market share vs. mutual funds

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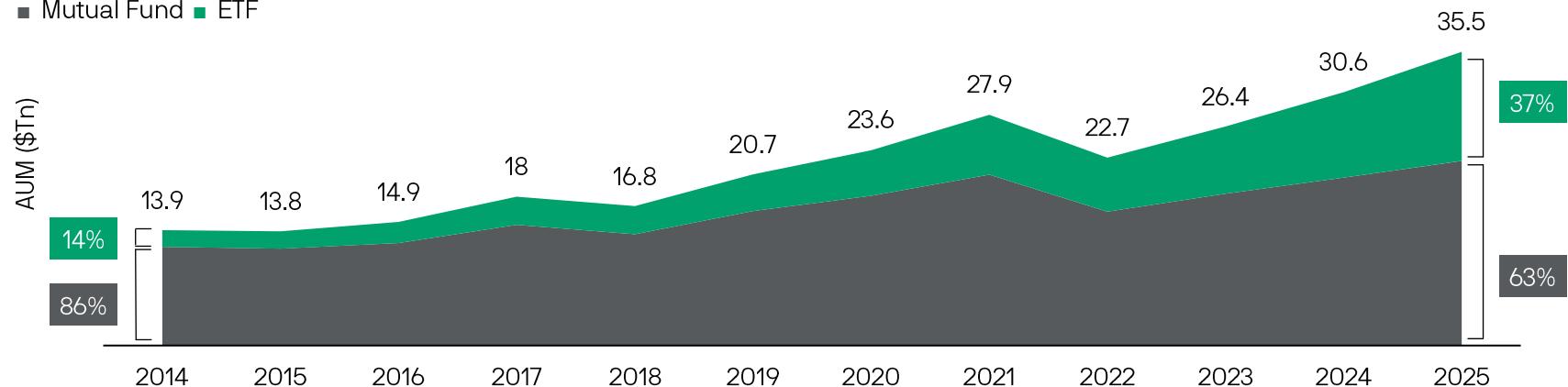
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ETF Landscape

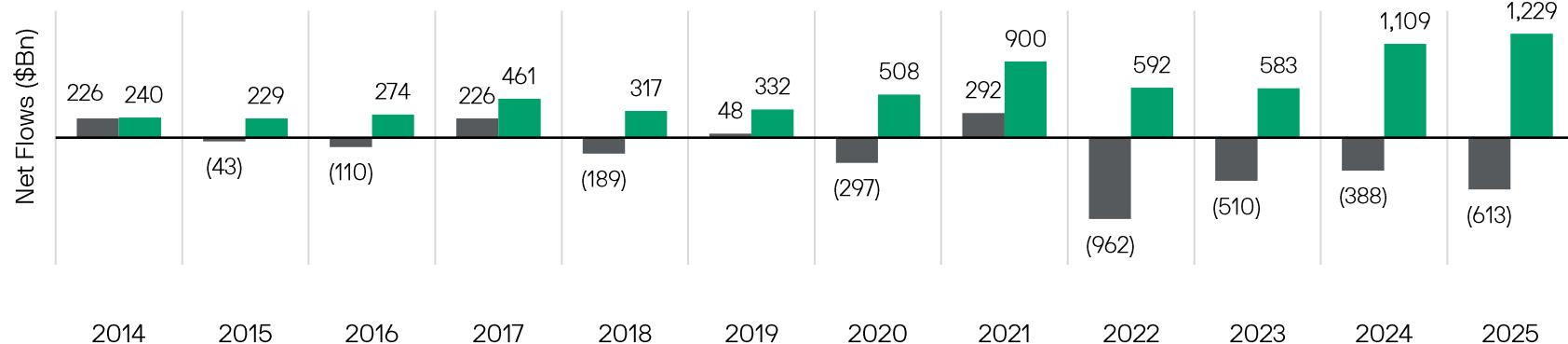
U.S. ETFs and mutual funds, by AUM

■ 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.

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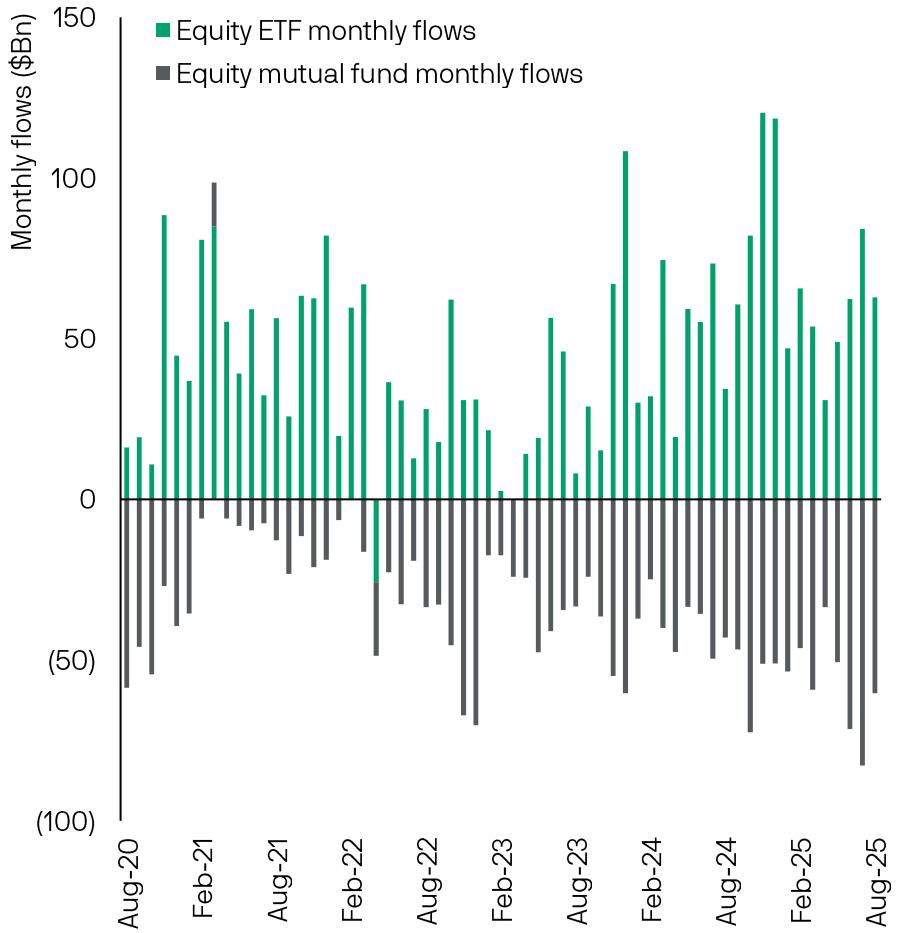


Equity ETF and mutual fund flows and capital gains

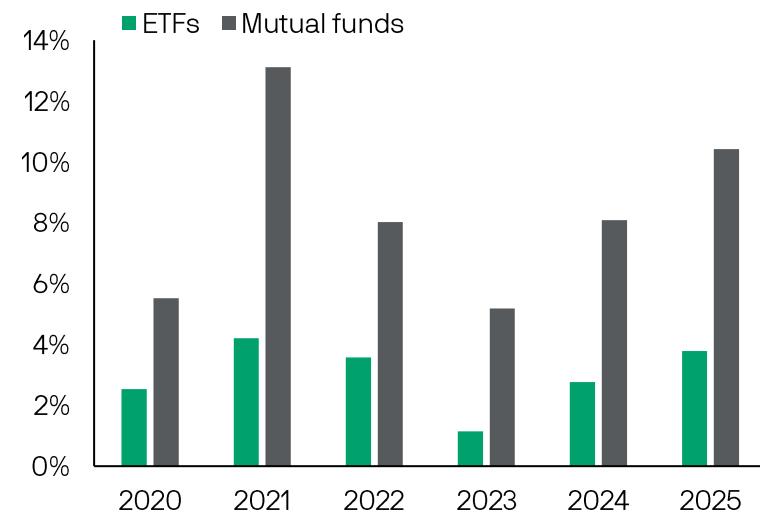
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ETF Landscape

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.
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ETFs by type and industry leaders ranked by AUM

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ETF Landscape



Market Cap



Factor



Active

Index tracking market exposures
AUM: \$9.5Tn

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

Portfolio is actively managed
AUM: \$1.5Tn

Top 5 Issuers
92% of AUM

Top 5 Issuers
86% of AUM

Top 5 Issuers
50% of AUM

BlackRock
Vanguard
SPDR
Invesco
Schwab

Vanguard
BlackRock
Invesco
Schwab
SPDR

DFA
JPMorgan
Capital Group
First Trust
Avantis

Source: Bloomberg, J.P. Morgan Asset Management. U.S. ETFs only; excludes ETNs.
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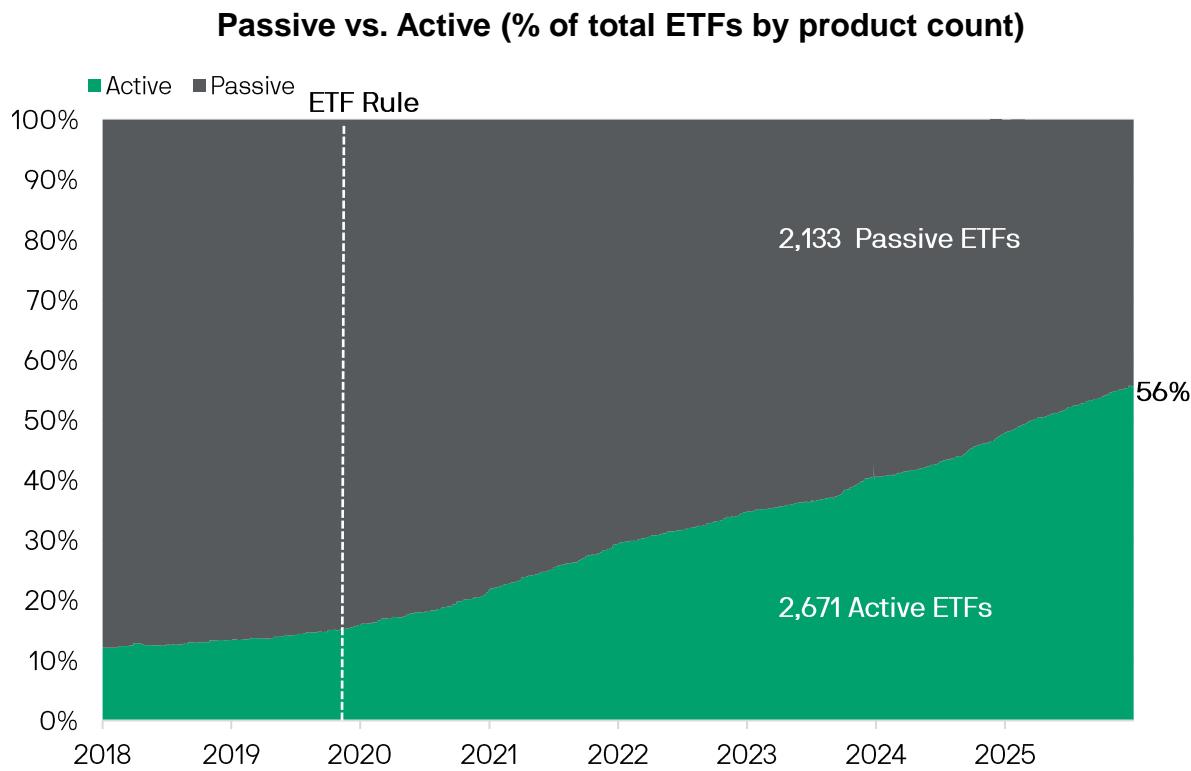


Why has active ETF issuance increased?

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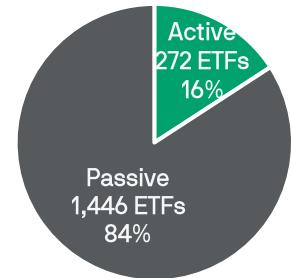
What was the ETF Rule of 2019?

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



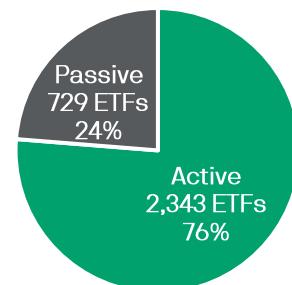
ETFs pre-ETF Rule

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.

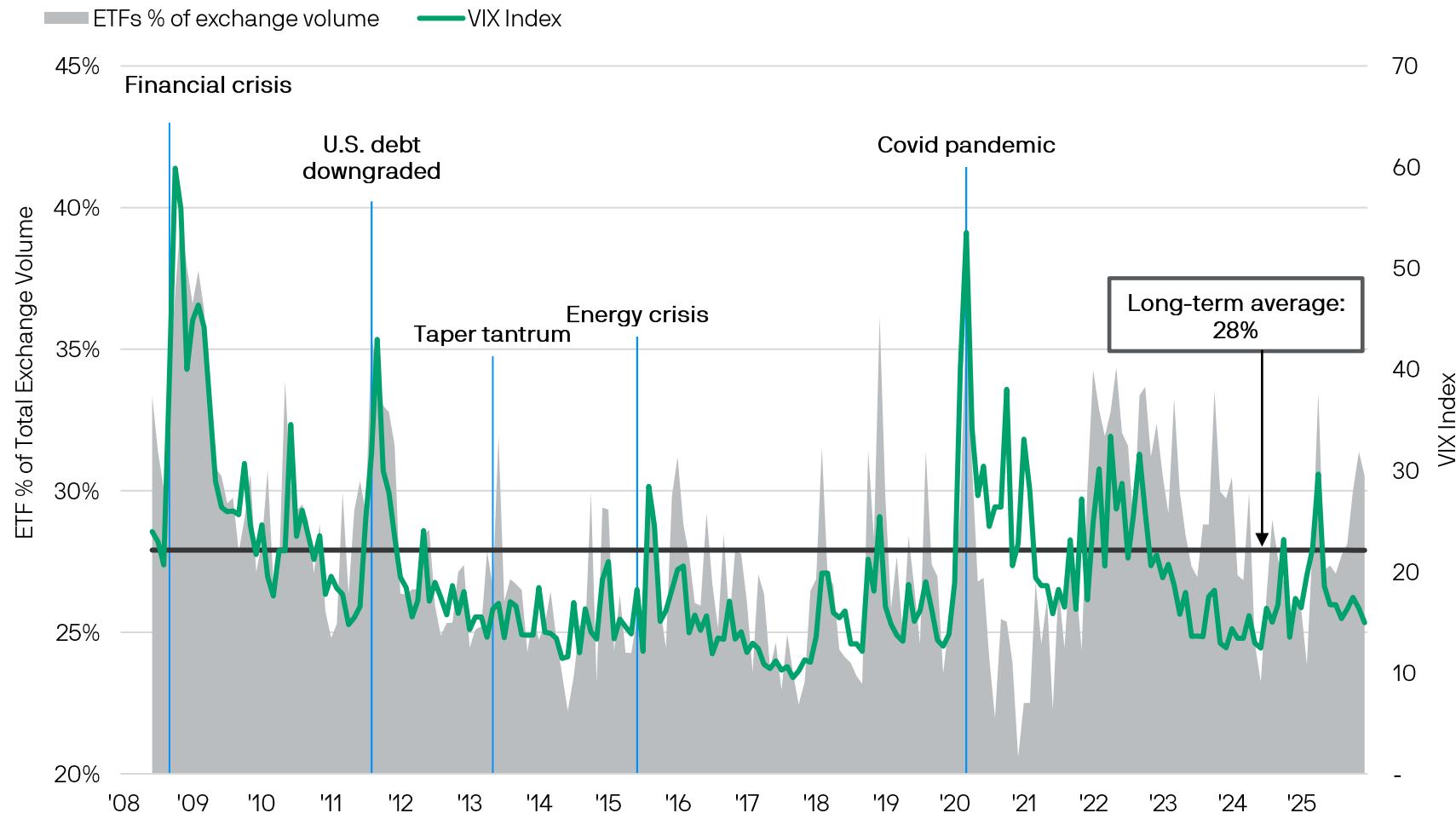


ETF exchange volume during periods of volatility

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ETF Landscape

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.

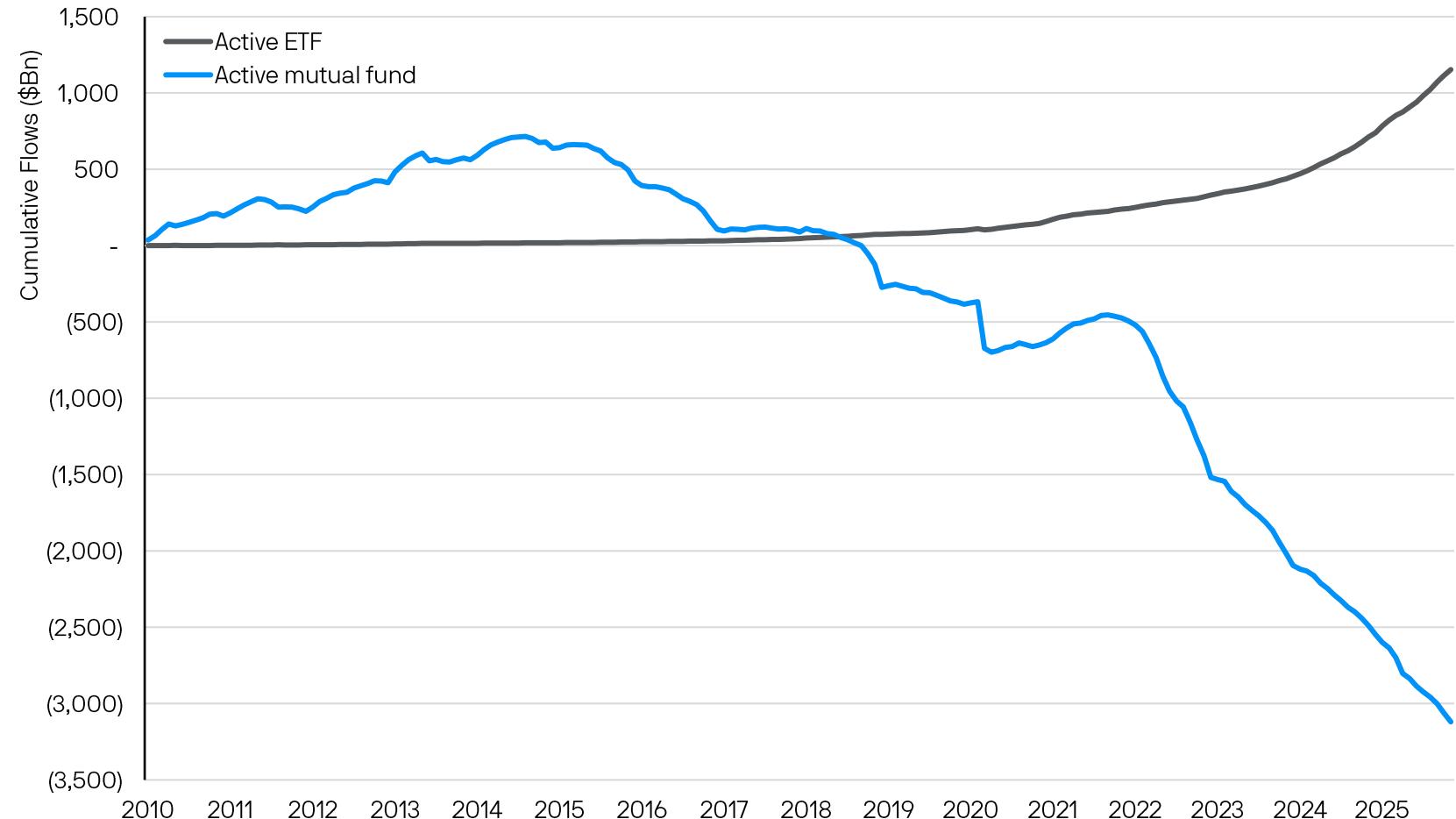
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Investors turning to ETFs

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Active flows across investment structure



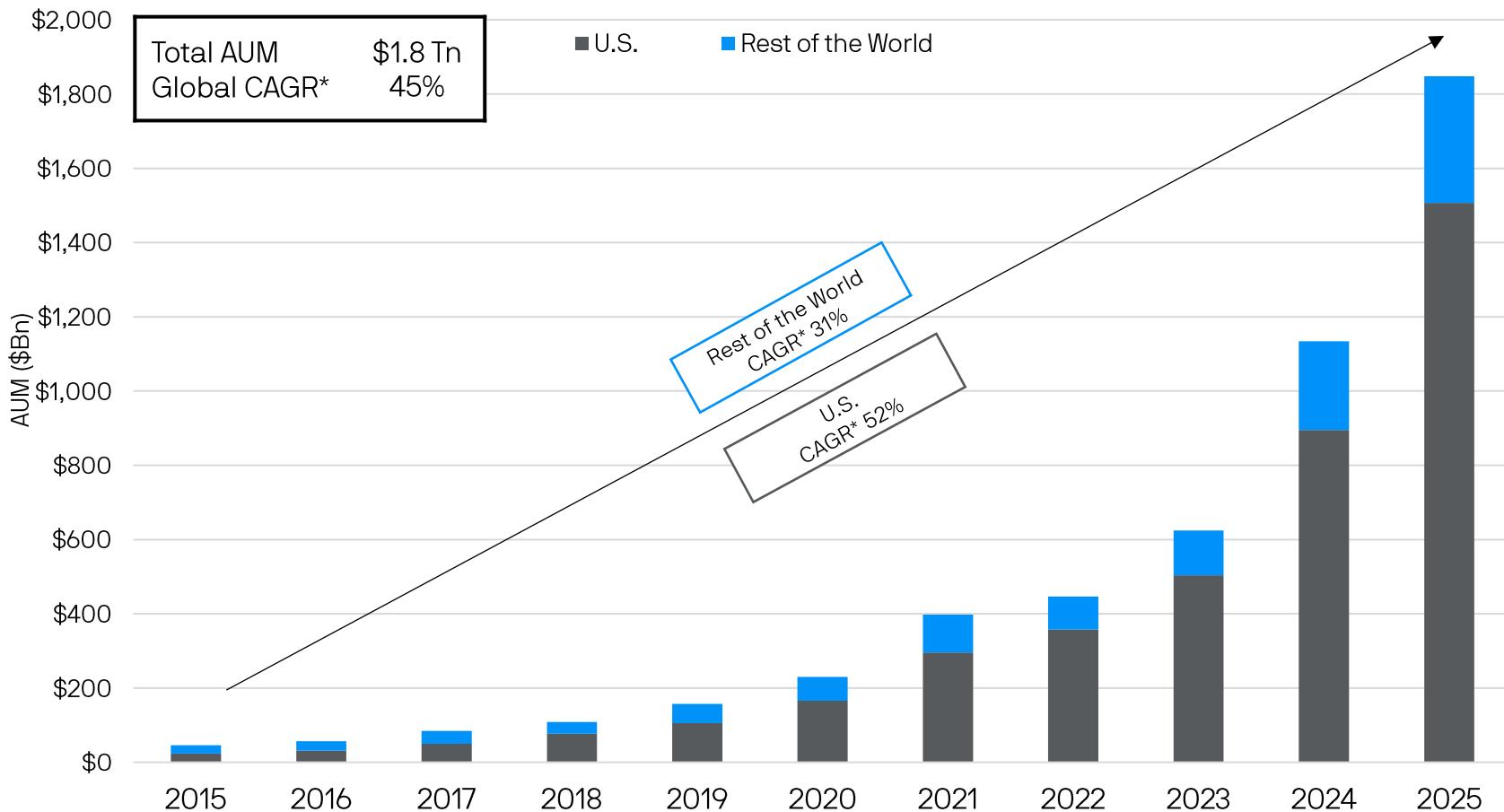
Source: Morningstar, J.P. Morgan Asset Management. Data as of November 30, 2025. Excluding money market and fund of funds.
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Over a decade of active ETF growth

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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, Saudi 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.

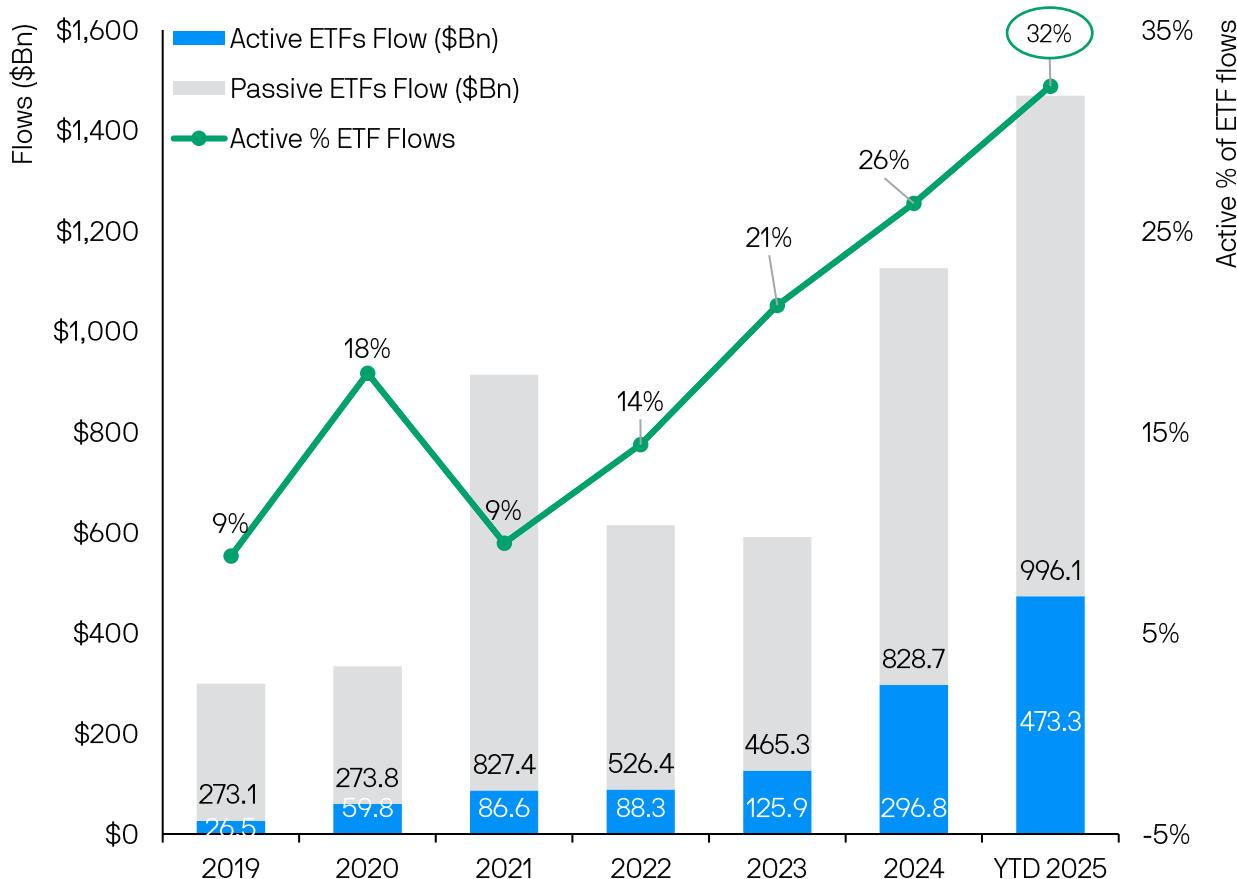
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Active ETFs take market share

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Active U.S. ETF flows steadily increasing



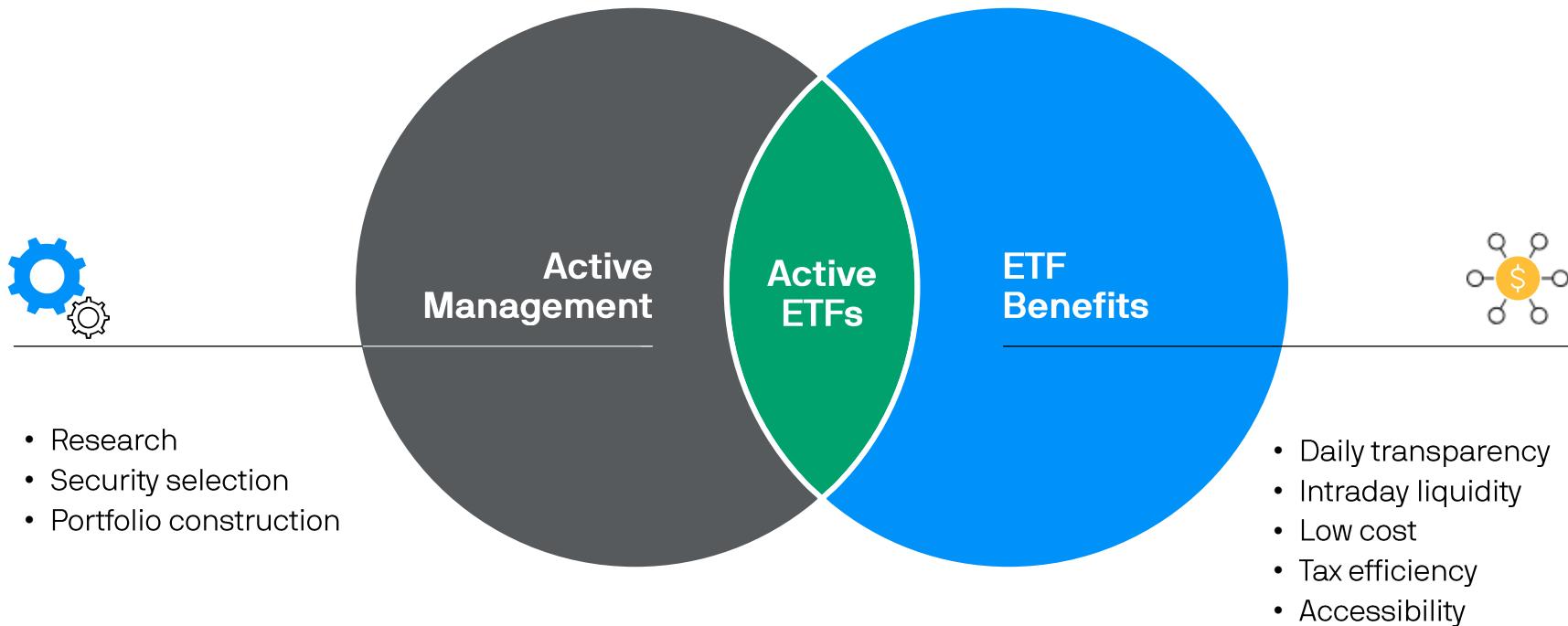
Source: Bloomberg, J.P. Morgan Asset Management.
Guide to ETFs – U.S. Data as of December 31, 2025.

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Active management in an ETF structure

GTE U.S. 15

Active



Source: J.P. Morgan Asset Management. For illustrative purposes only.
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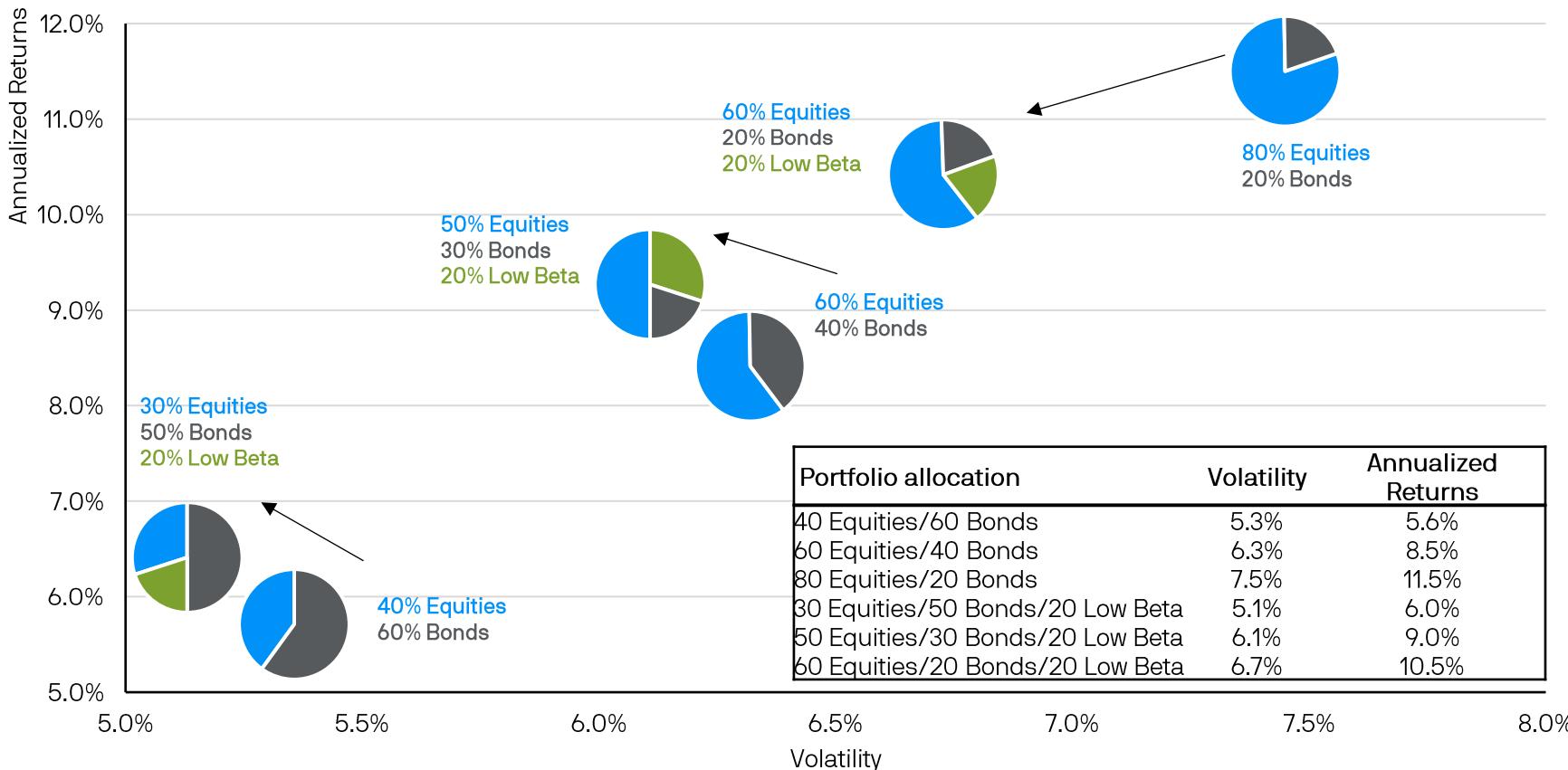


Diversification with lower beta strategies

GTE U.S. 16

Low Beta and portfolio risk/return

Annualized volatility and returns, December 2020 – December 2025



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

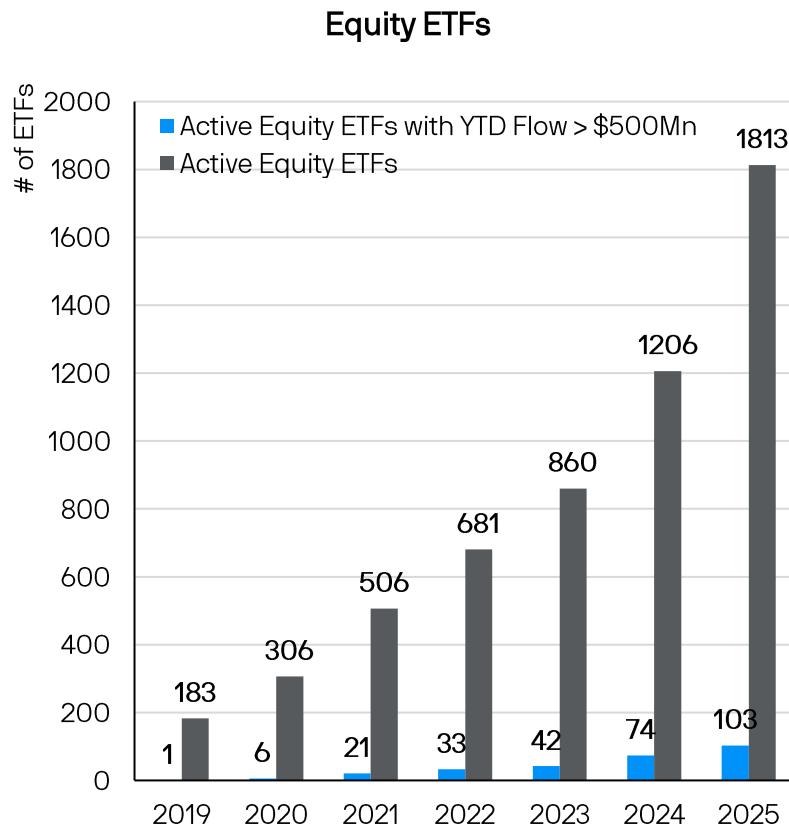
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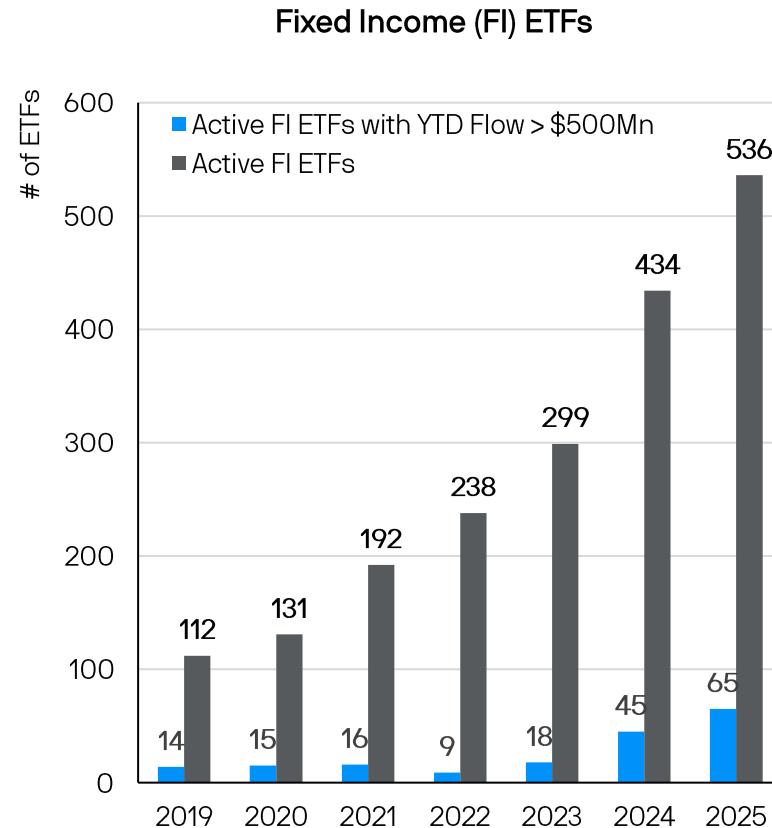
Scaling ETFs requires more than market presence

GTE U.S. 17

Active



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

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

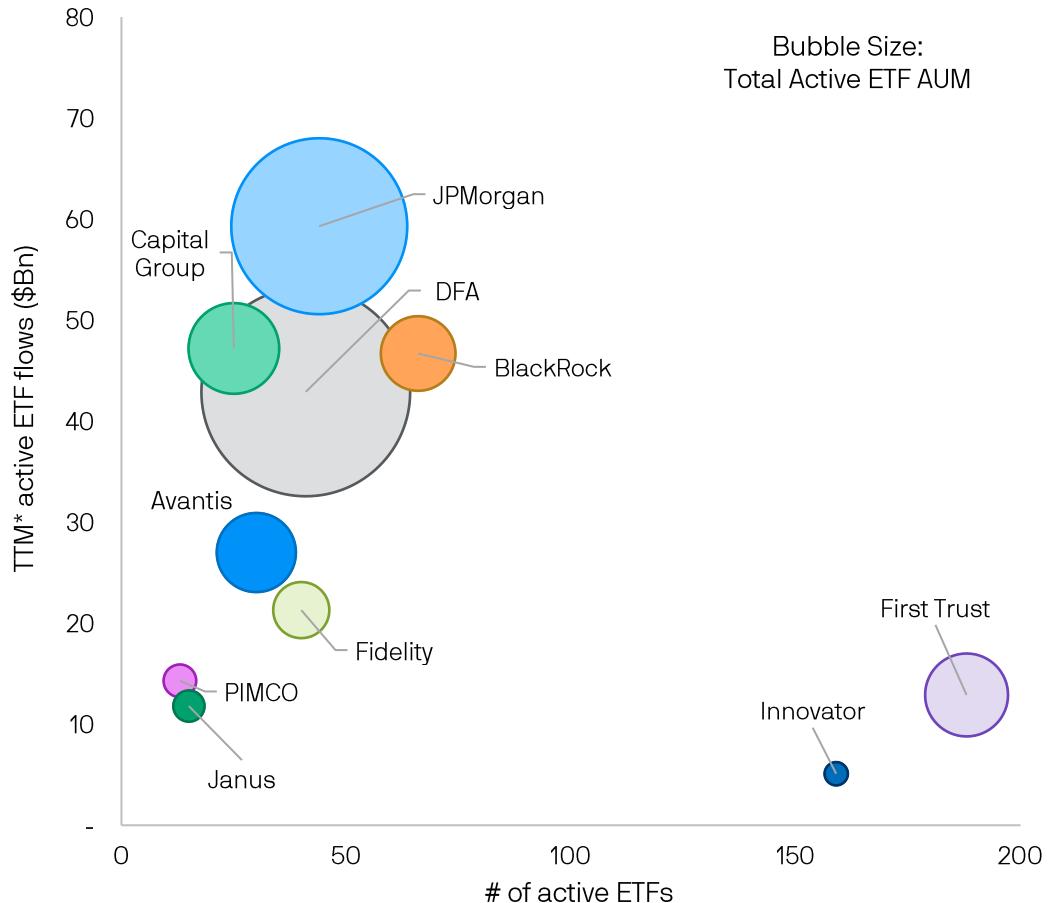
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Key players in the active ETF space

GTE U.S. 18

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.

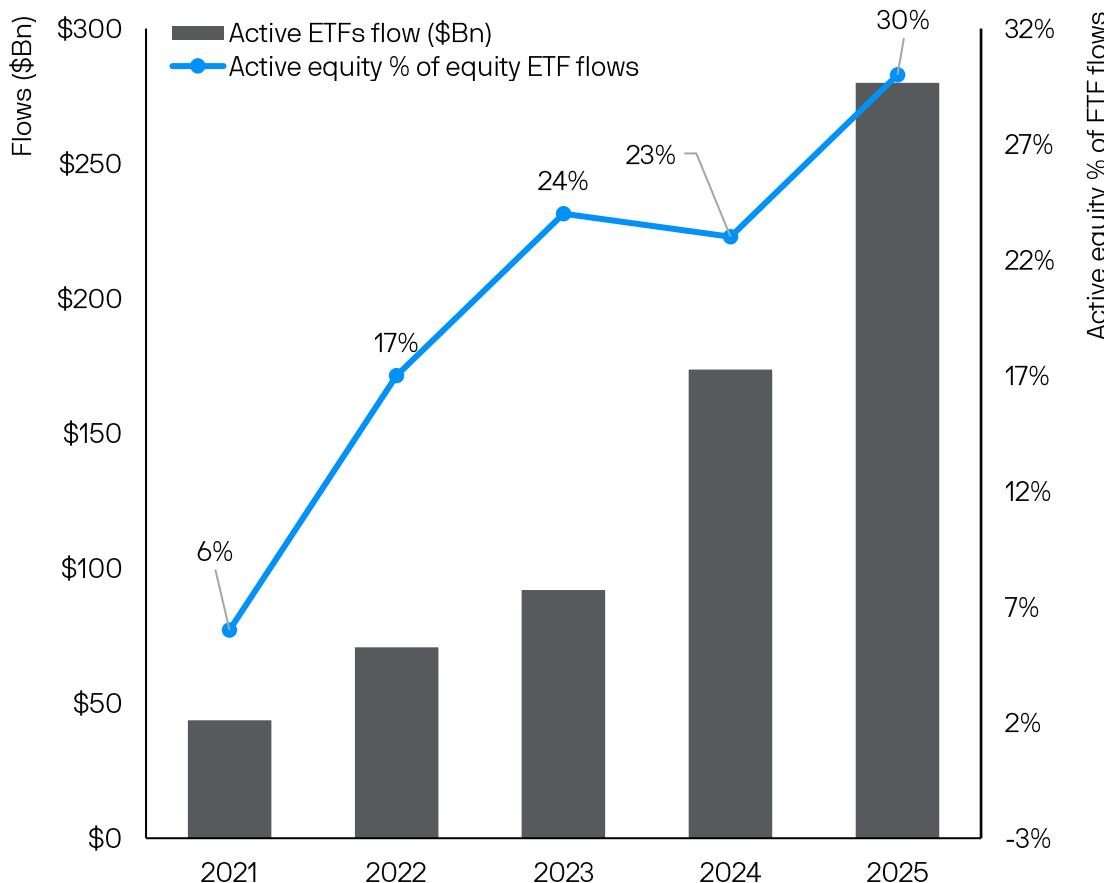
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Active U.S. equity ETF flows

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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

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

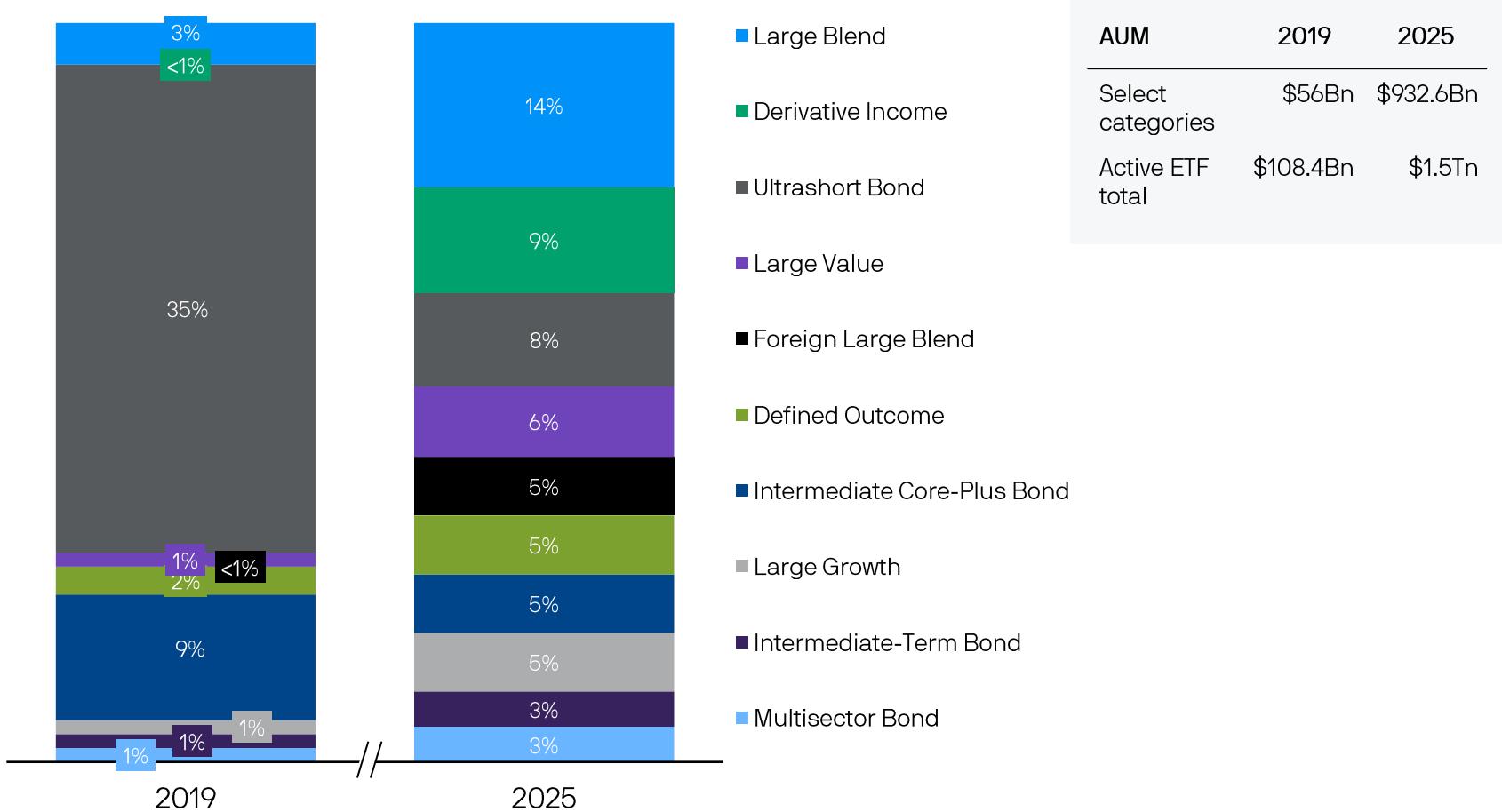
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Growth trends within the active ETF market

GTE U.S. 20

Active AUM across Morningstar categories



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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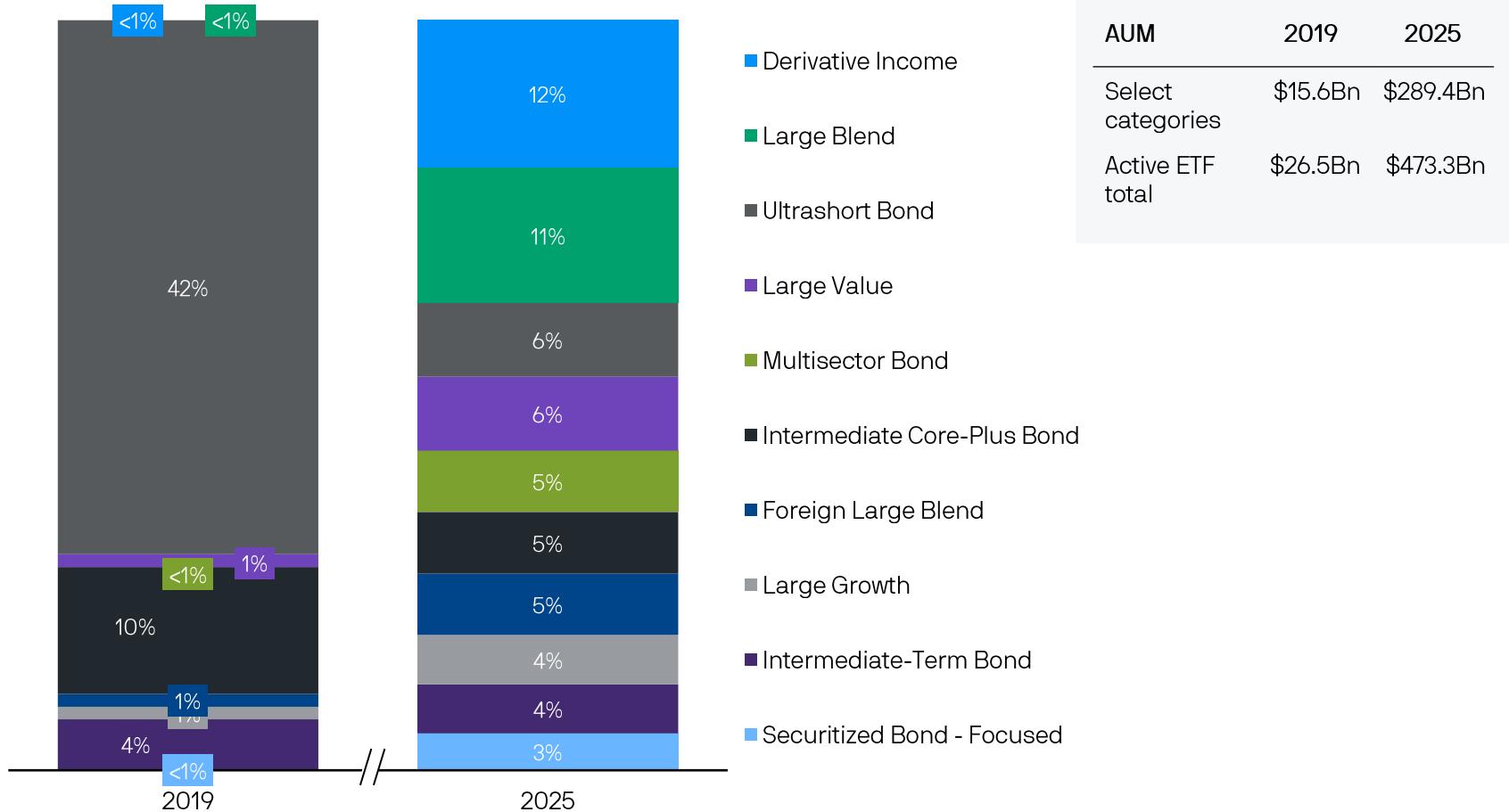


Active category flows over time

GTE U.S. 21

Percent of active flows across Morningstar categories

Active



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.

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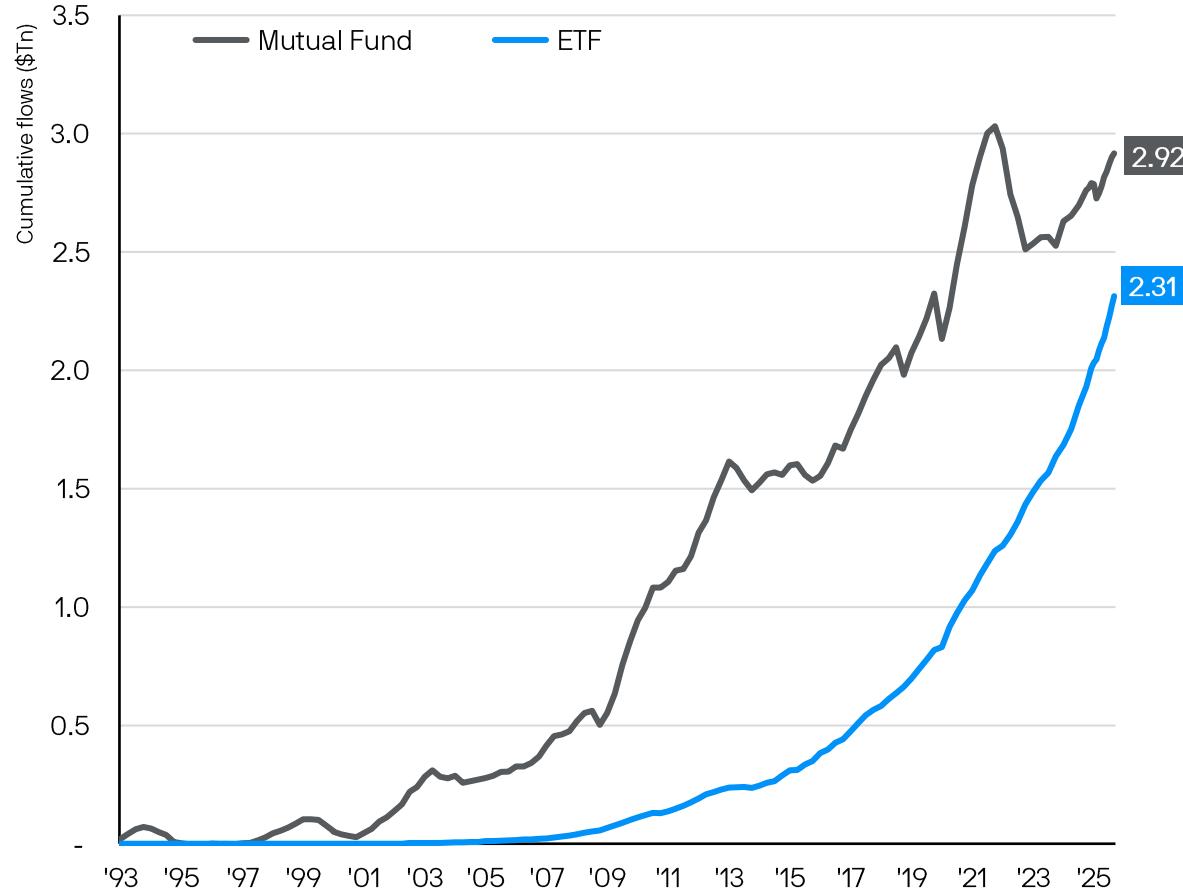


Fixed income flows and AUM, by vehicle

GTE U.S. 22

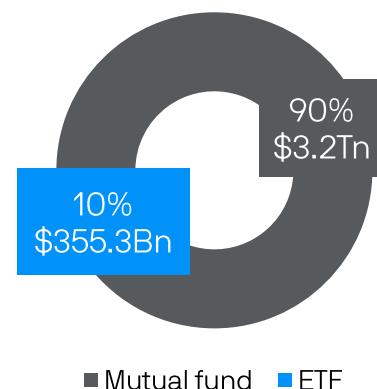
Fixed income ETF flows and AUM are steadily increasing

Fixed Income Ecosystem

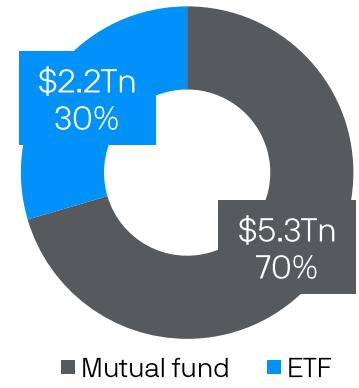


Source: Morningstar, J.P. Morgan Asset Management. Data as of November 30, 2025.
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Fixed income total AUM
2015



Fixed income total AUM
2025

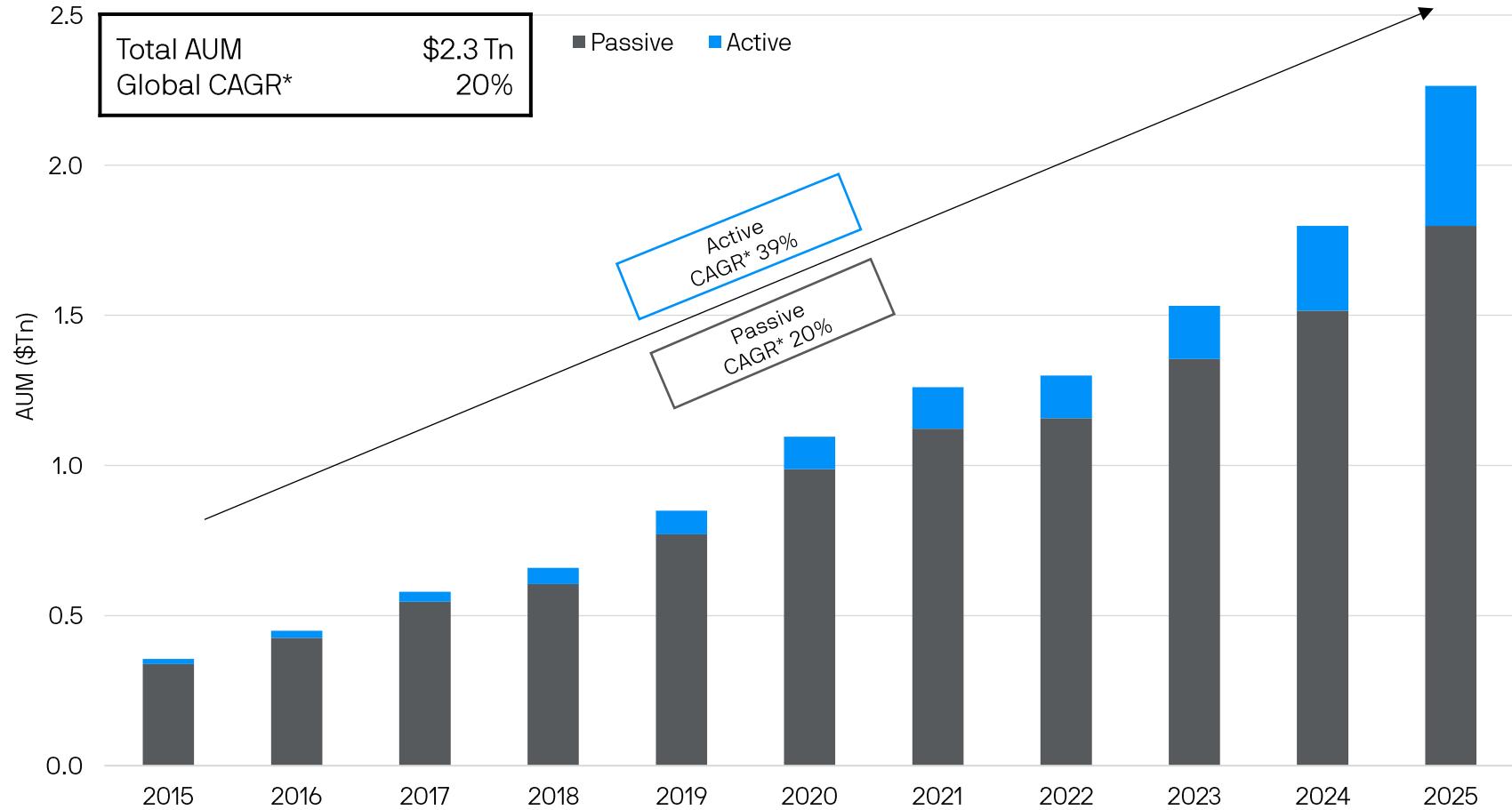


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Active fixed income gaining adoption

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Source: Bloomberg, FactSet, J.P. Morgan Asset Management. US ETFs only. *Compound annual growth rate (CAGR).
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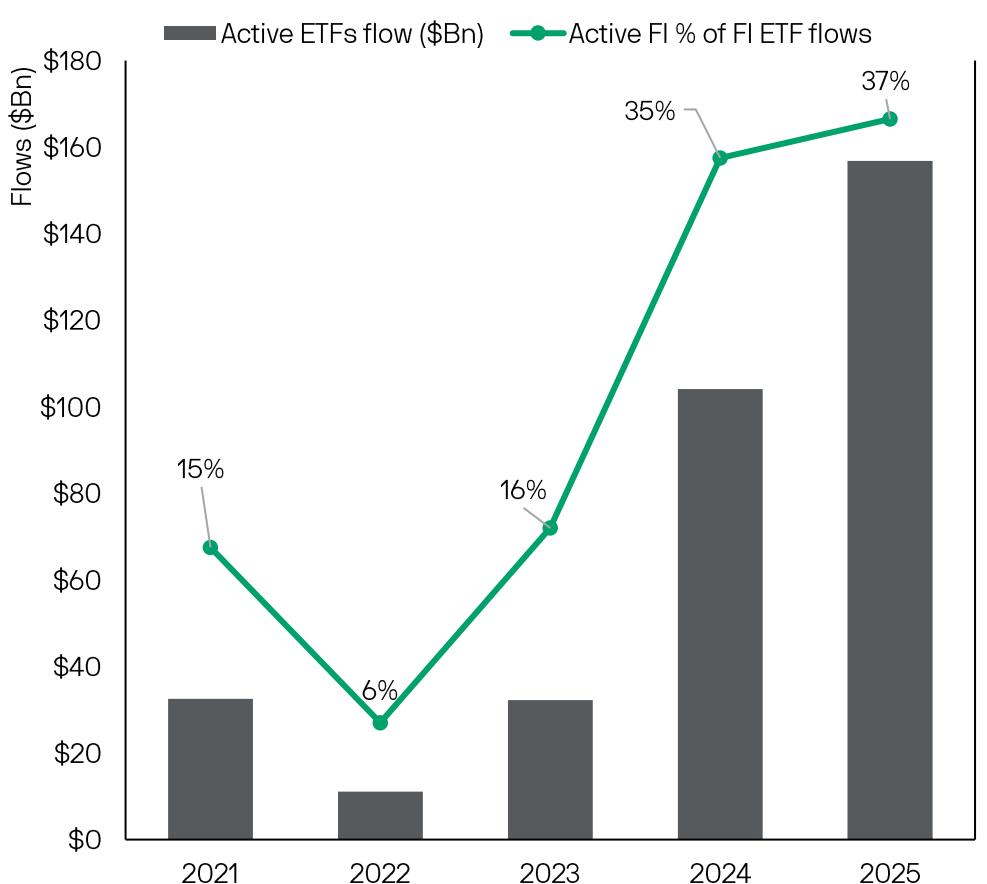


Active U.S. fixed income ETF flows

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Fixed Income Ecosystem

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

Source: Bloomberg, J.P. Morgan Asset Management.
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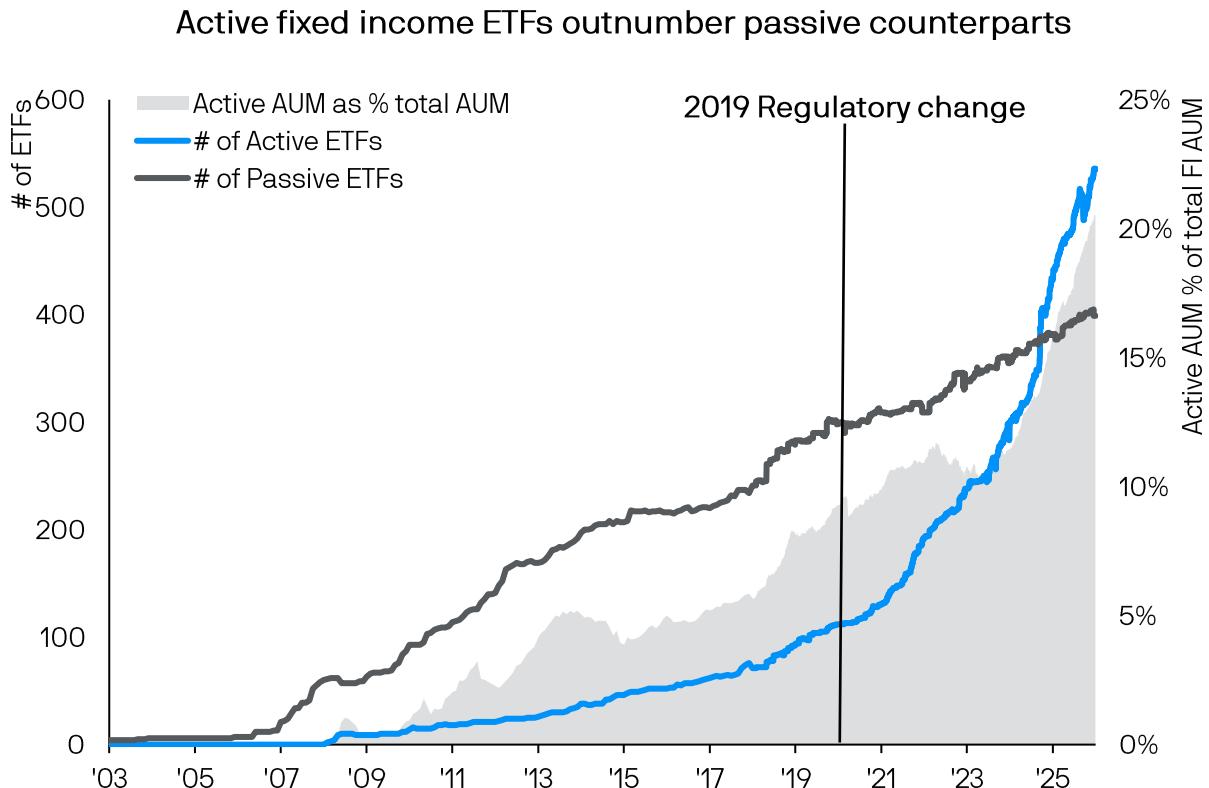
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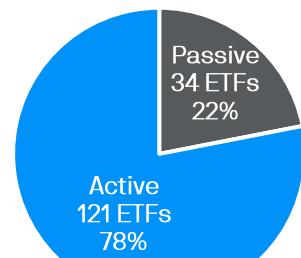
Turning point in the fixed income ETF market

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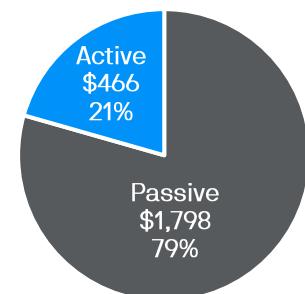
Fixed Income Ecosystem



Fixed income ETF launches (TTM*)



Fixed income AUM (\$Bn)



Source: Bloomberg, FactSet, J.P. Morgan Asset Management. *Trailing twelve months (TTM)
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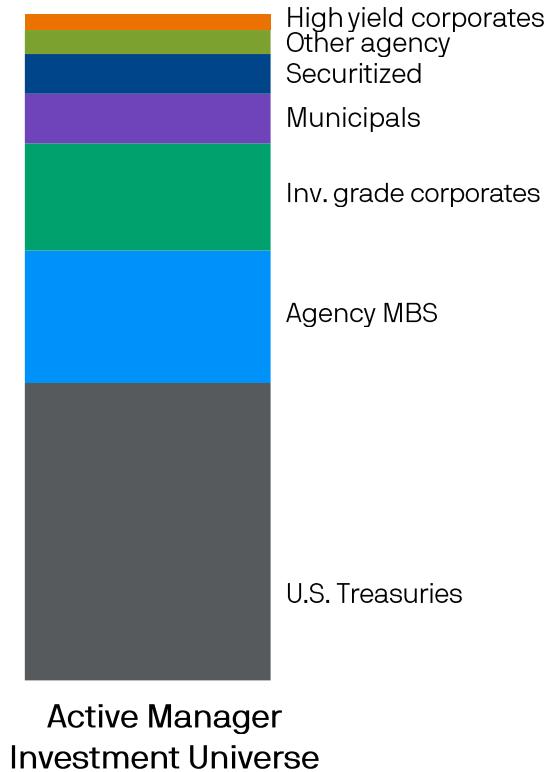
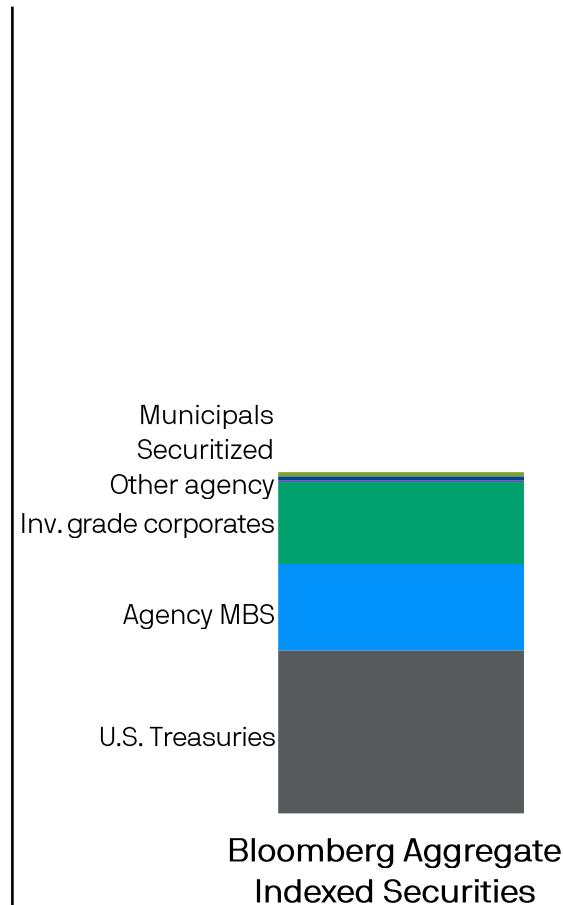
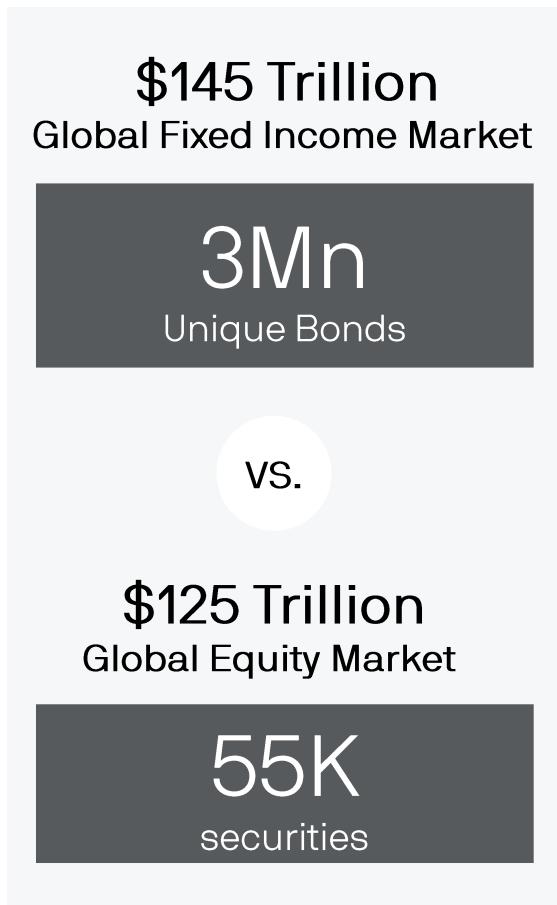


Growth runway for active ETFs in fixed income

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

Fixed Income Ecosystem



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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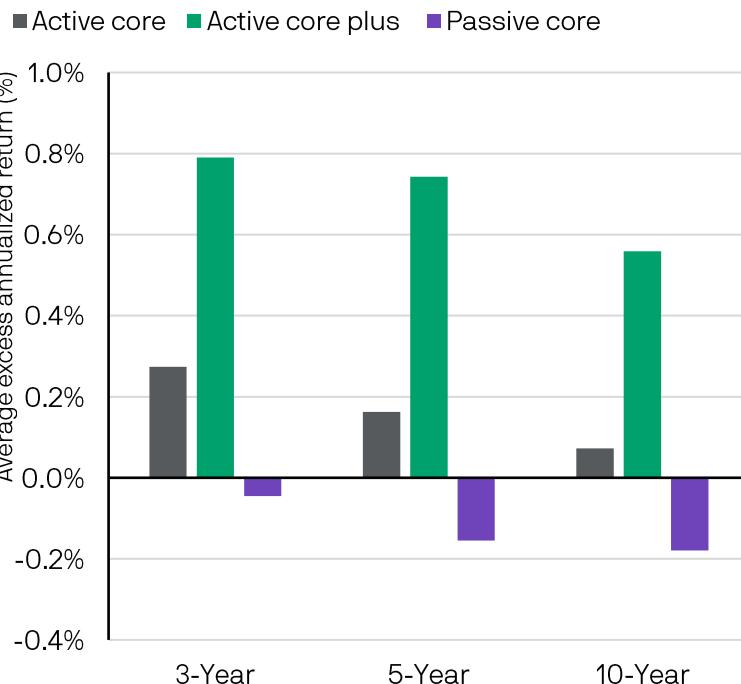
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Active fixed income managers outperform their passive peers

GTE U.S. 27

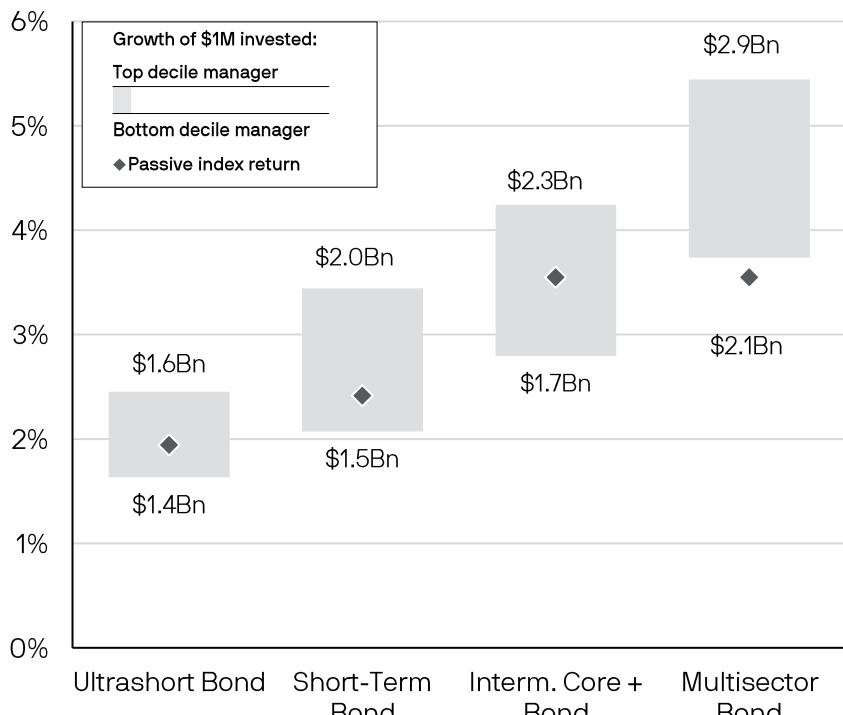
Active typically outperforms passive

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.

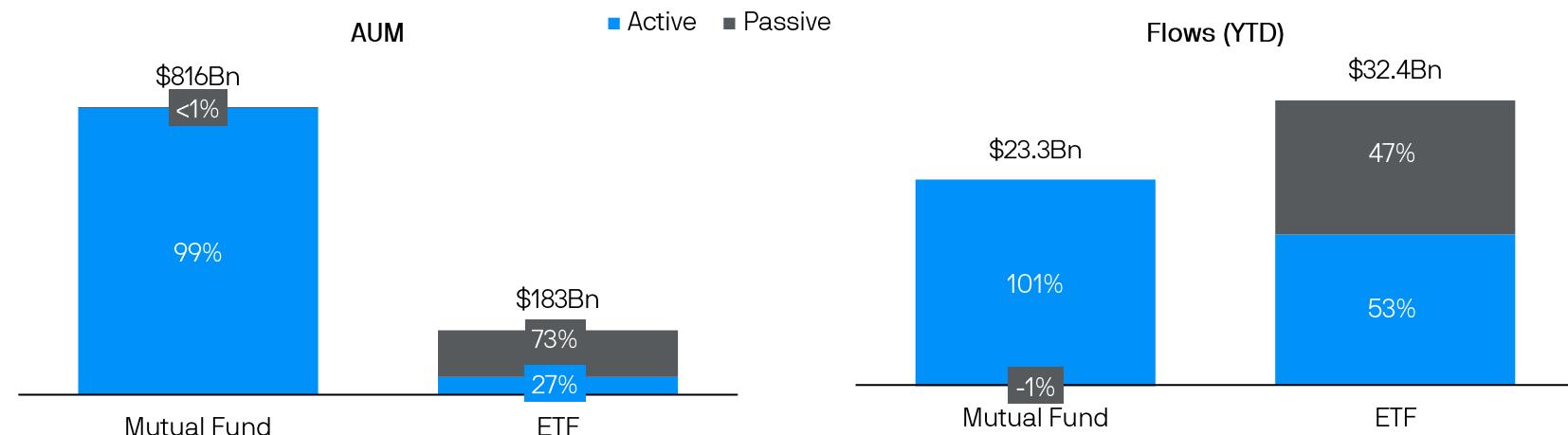


Muni ETF growth – the trend is active

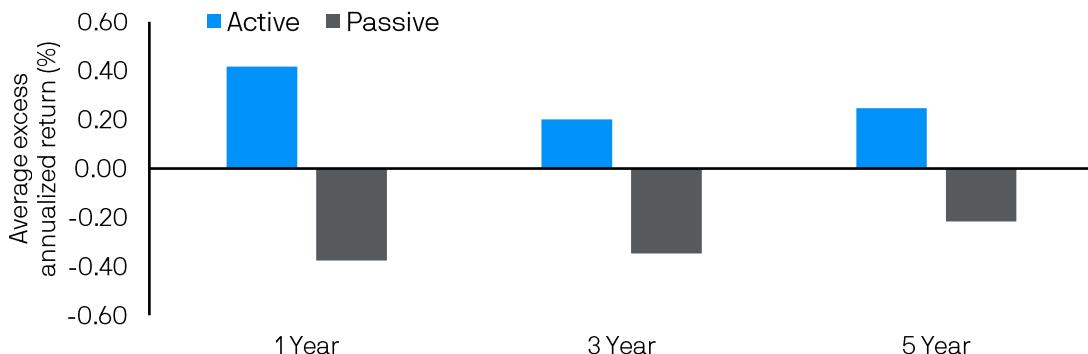
GTE U.S. 28

Municipal AUM and flows, by vehicle

Fixed Income Ecosystem



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.

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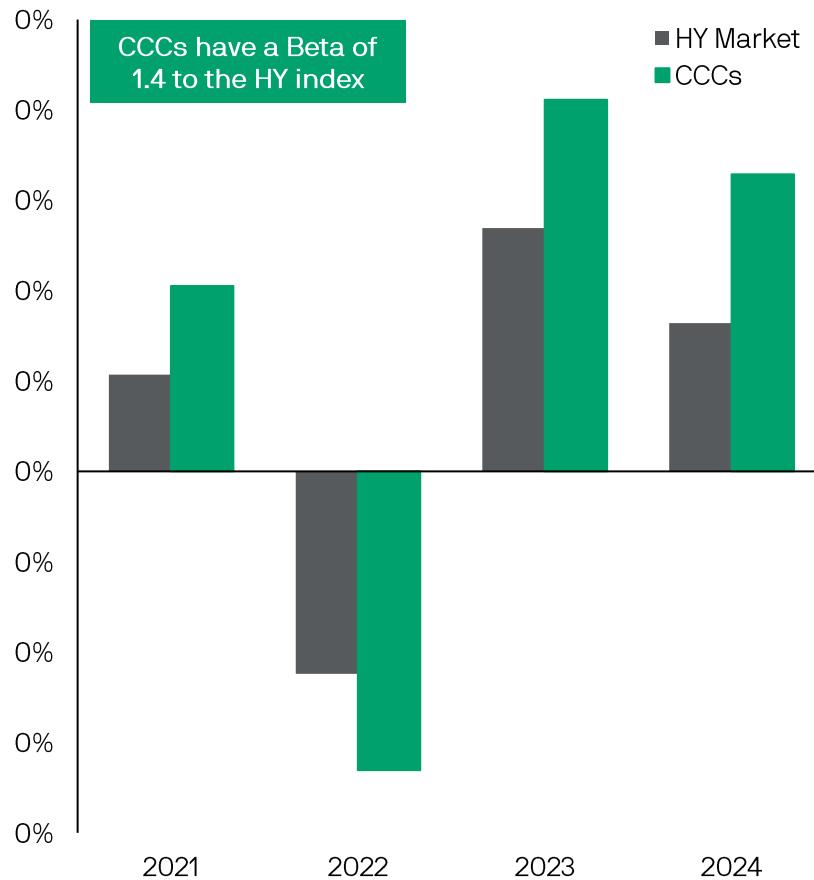
Navigating risk in the high yield market

GTE U.S. 29

CCCs returns are volatile

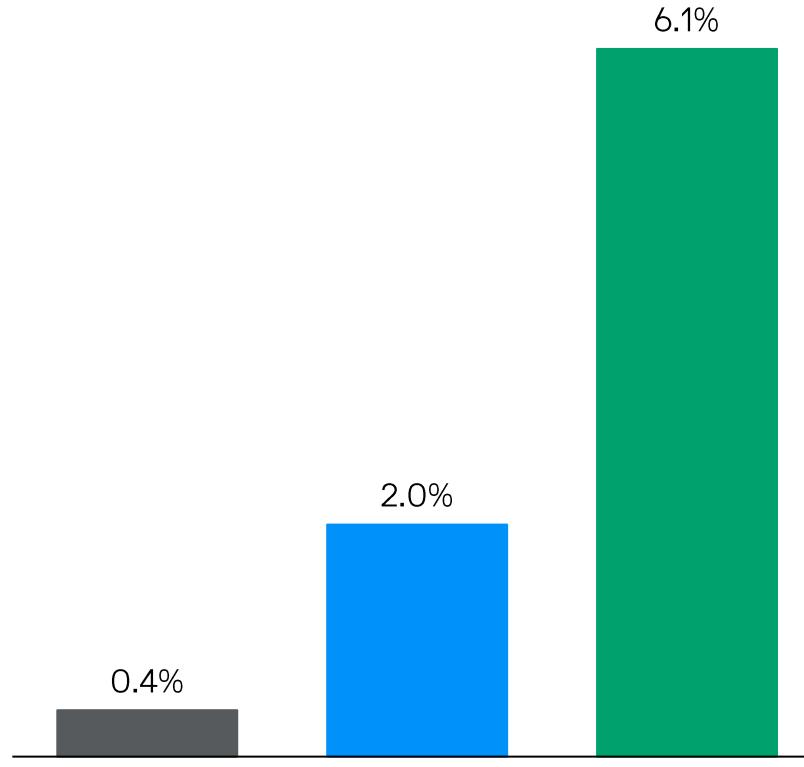
Calendar year returns

Fixed Income Ecosystem



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: JPMorgan Chase Commercial & Investment Bank (CIB). All data as of December 31, 2024. Guide to ETFs – U.S. Data as of December 31, 2025.

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Top 10 industry leaders

GTE U.S. 30

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
TOTAL	13,445,315	1,469,413	1,469,413	229,358	14%	4,804 / 1,092

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
Total	1,469,413	13,445,315

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
TOTAL	1,506,943	473,271	473,271	43,599	53%	2,676 / 903

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
Total	473,271	1,506,943

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.

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

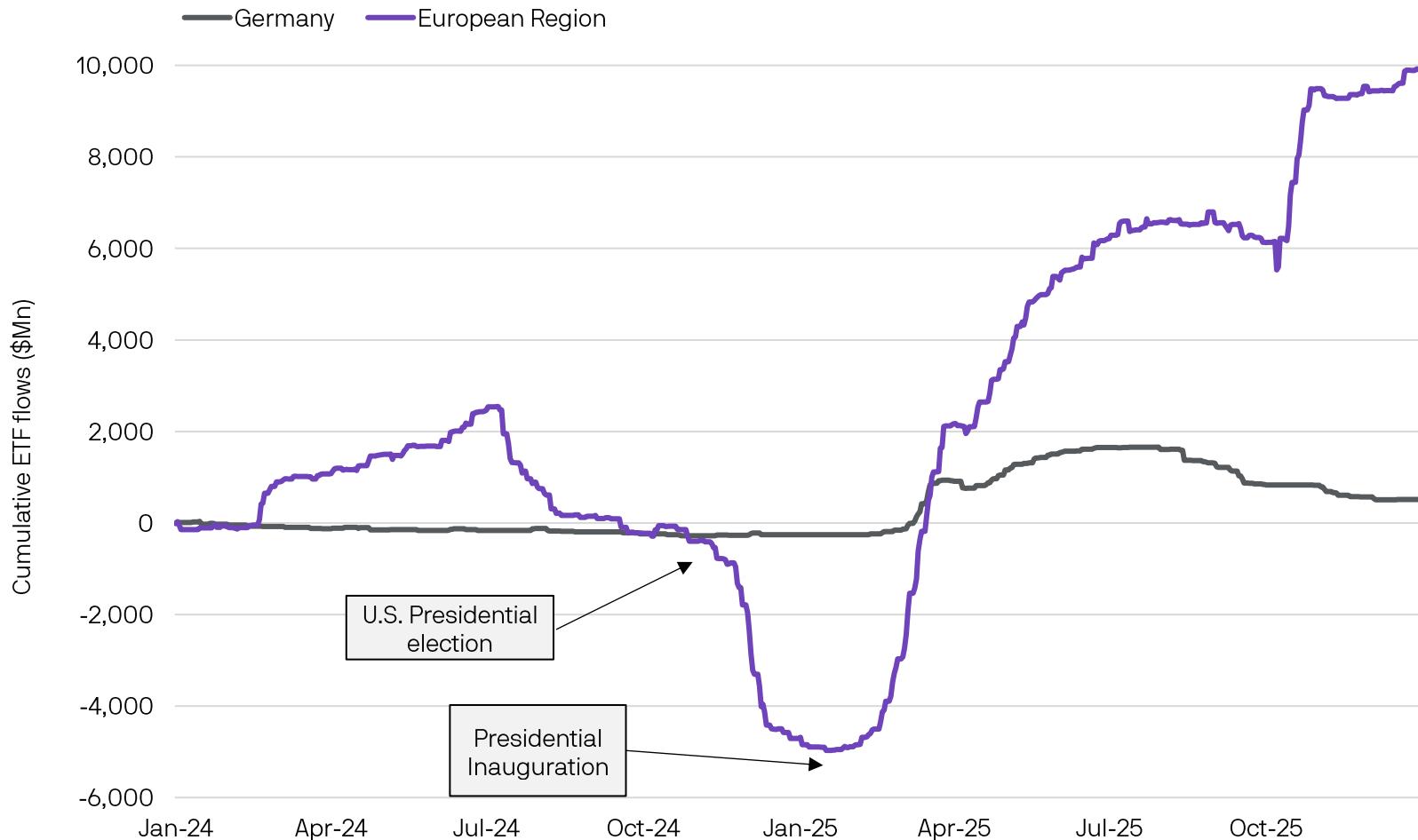


A lens into investor sentiment by ETF flows

GTE U.S. 31

Trends

Resurgence of ETF flows into European ETFs



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

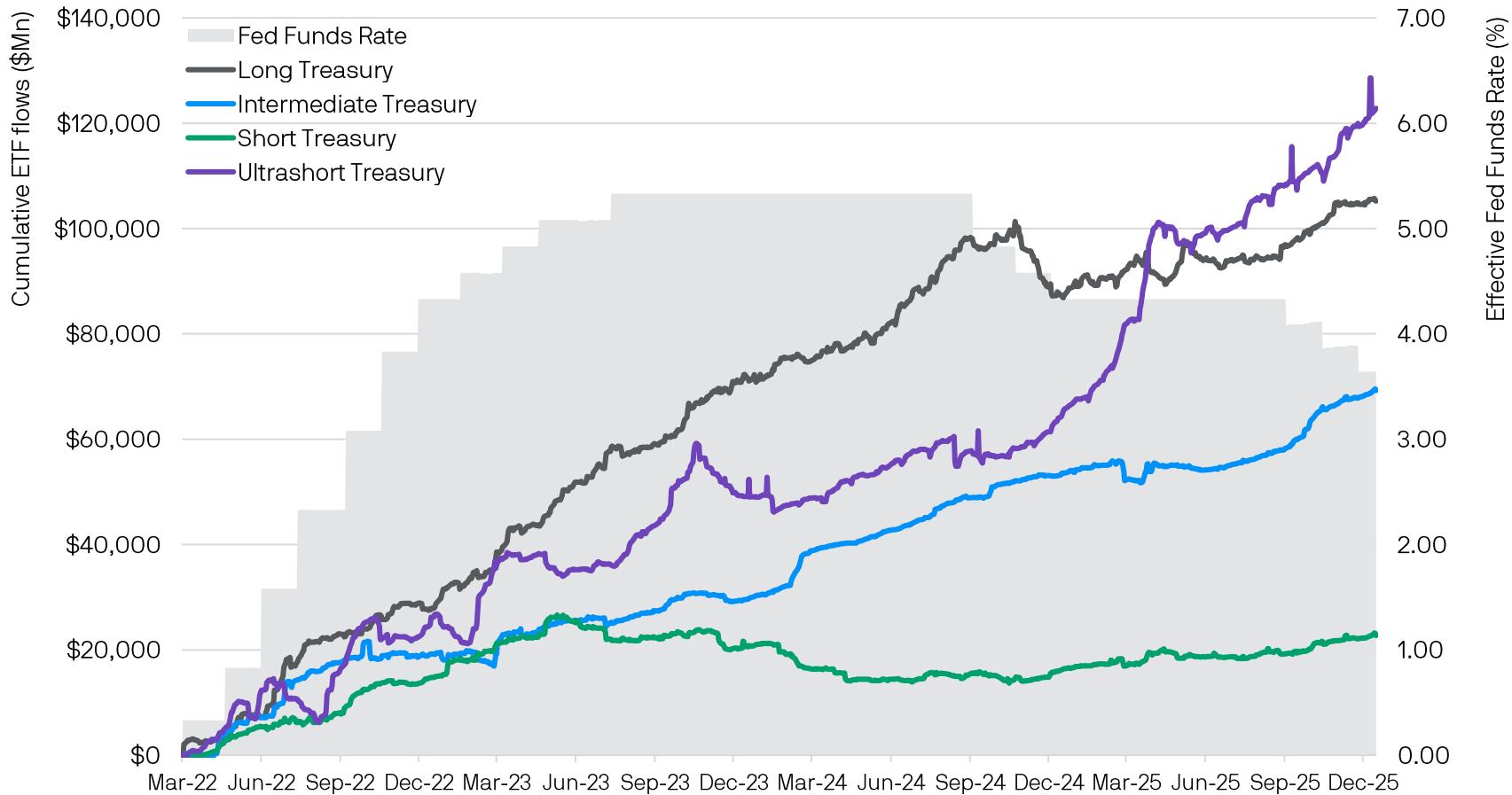
GTE

U.S.

32

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

Trends



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

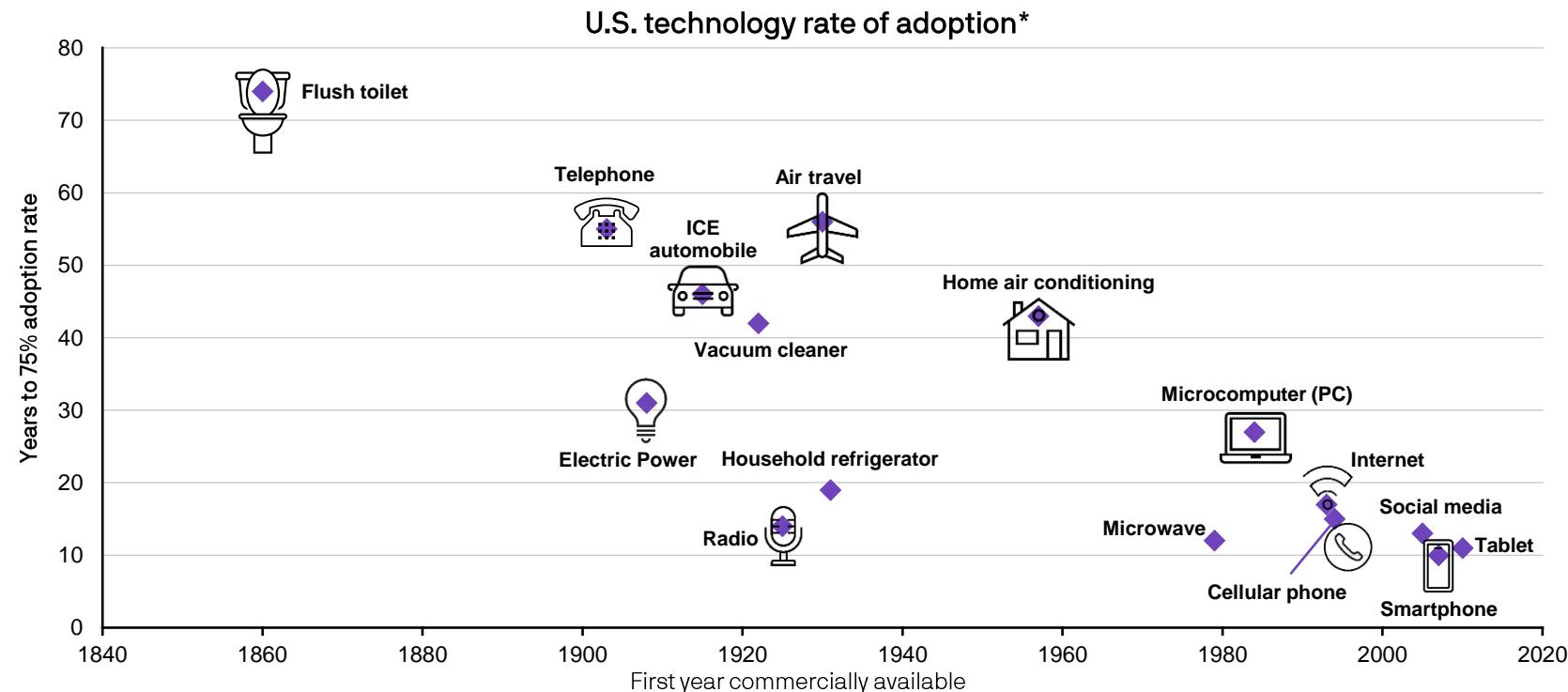
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Defining a theme

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.



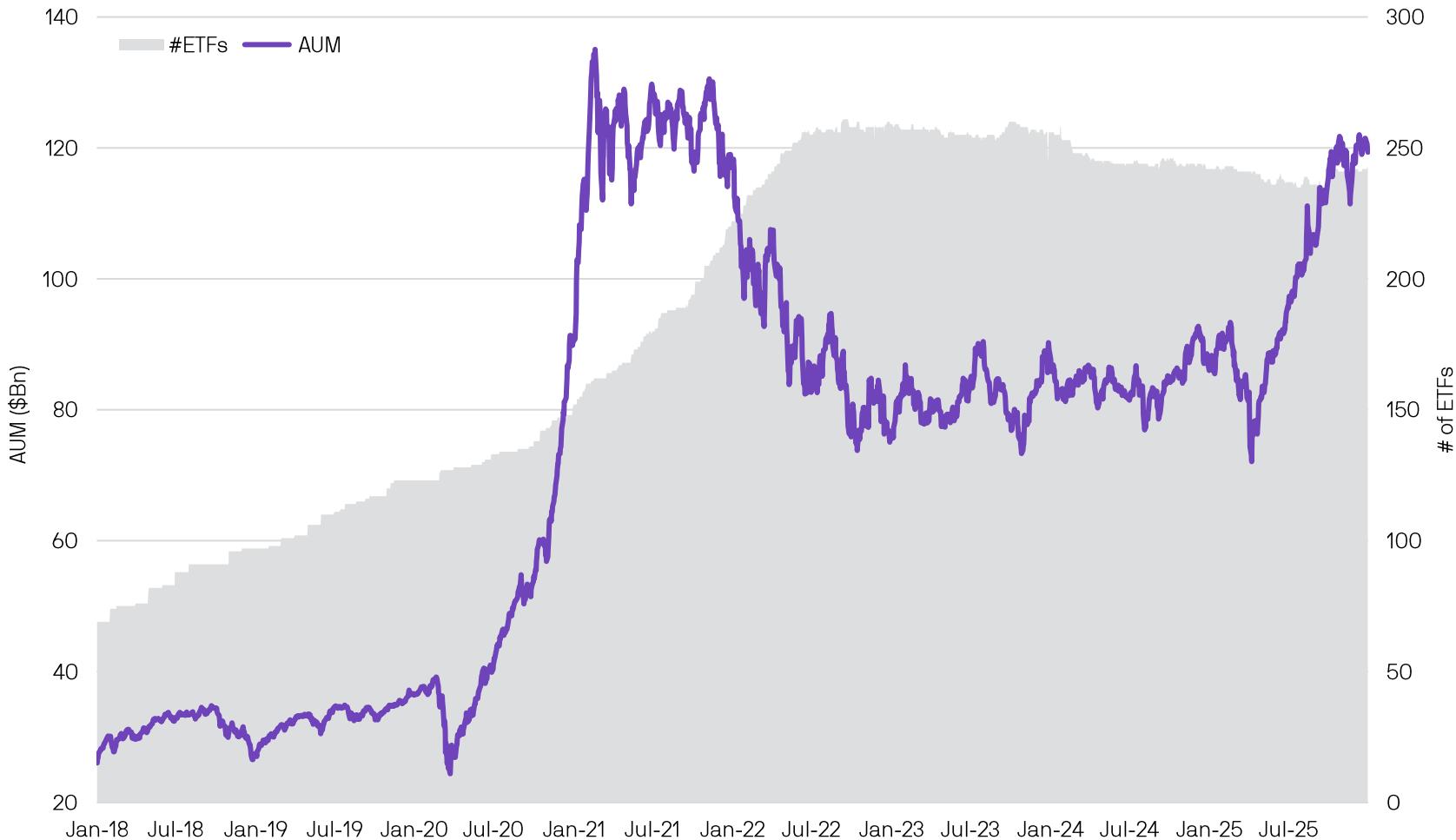
Source: Asymco, compiled from various sources with support of the Clayton Christensen Institute, J.P. Morgan Asset Management.
*Estimated from current adoption trends. Chart is exhibit 5 in "The transformative power of generative AI: Supercharged productivity or mass joblessness?" by J.P. Morgan Asset Management.
Guide to ETFs – U.S. Data as of December 31, 2025.



The timeline of thematic ETF AUM

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Thematic ETF Growth



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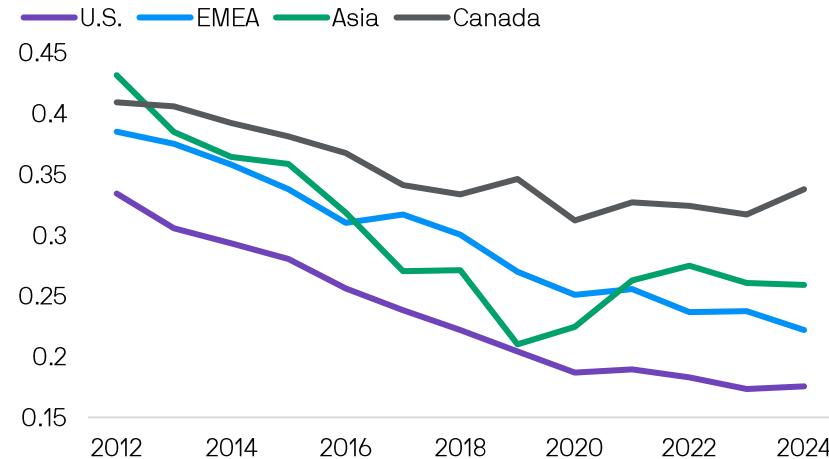


Understanding ETF fees over time

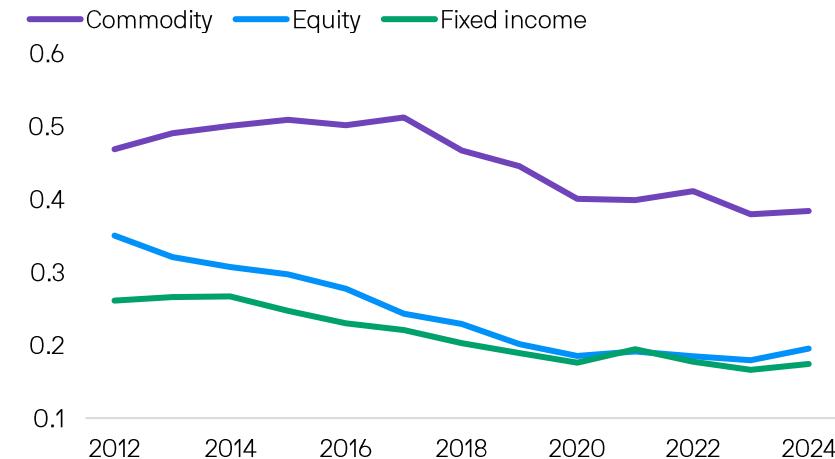
GTE U.S. 35

Trends

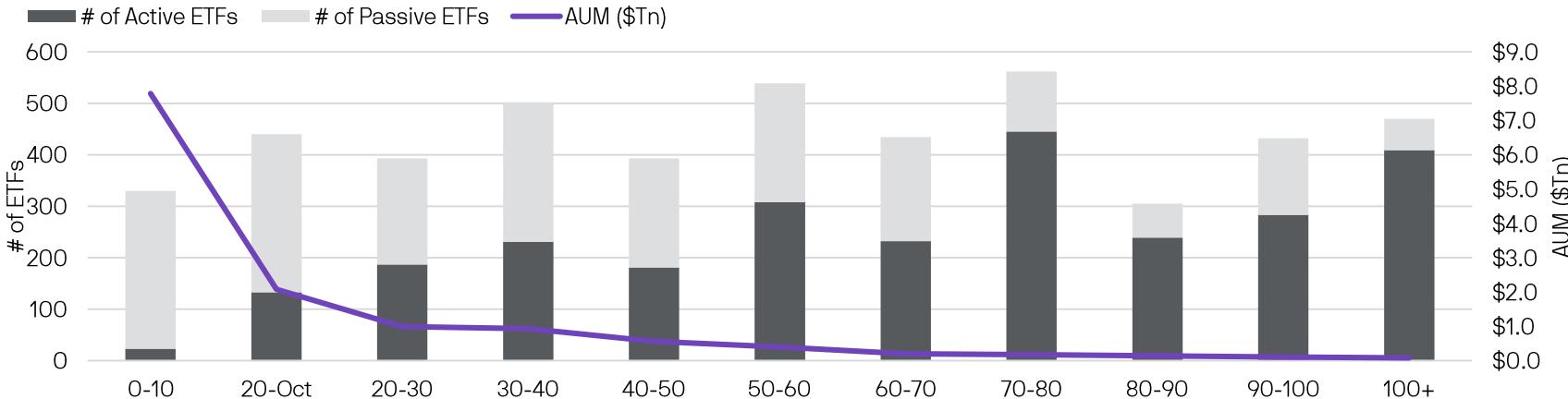
AUM-weighted average fees, by region



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.

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Why ETF model portfolios are on the rise

GTE U.S. 36

Trends

Benefits of models



Investment Management
Expertise



Business Scalability



Diversification

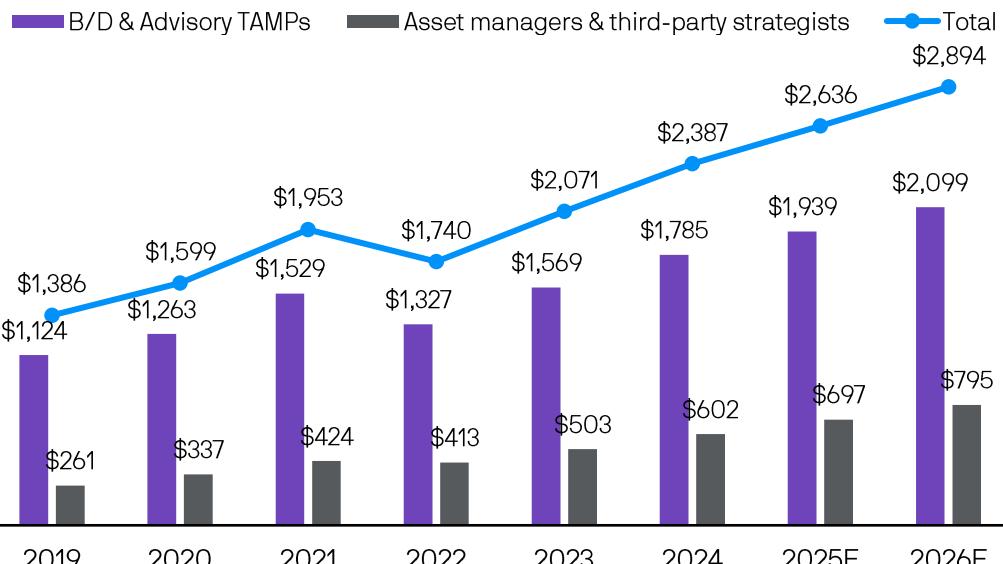


Time-saving

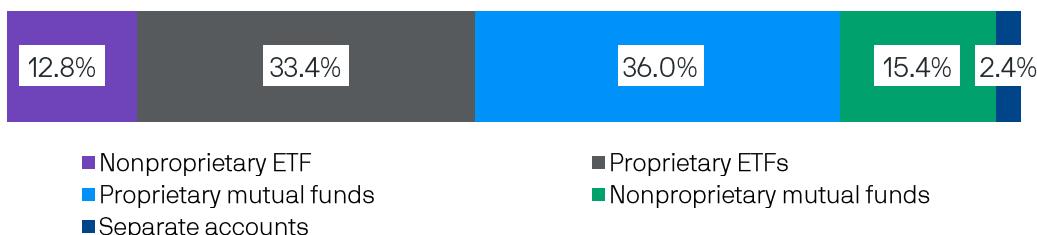


Due Diligence

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

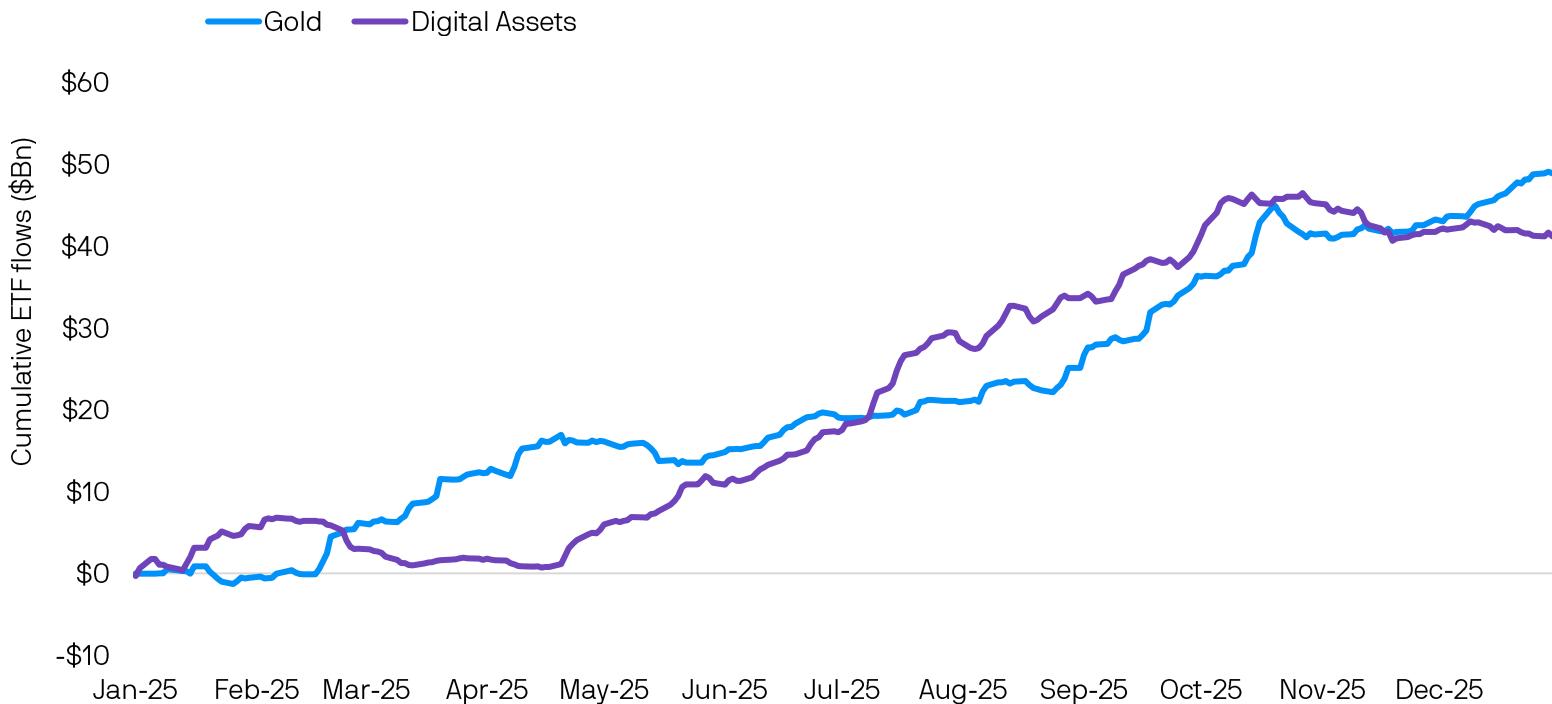
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Digital currency and gold ETFs flows

GTE U.S. 37

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.

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

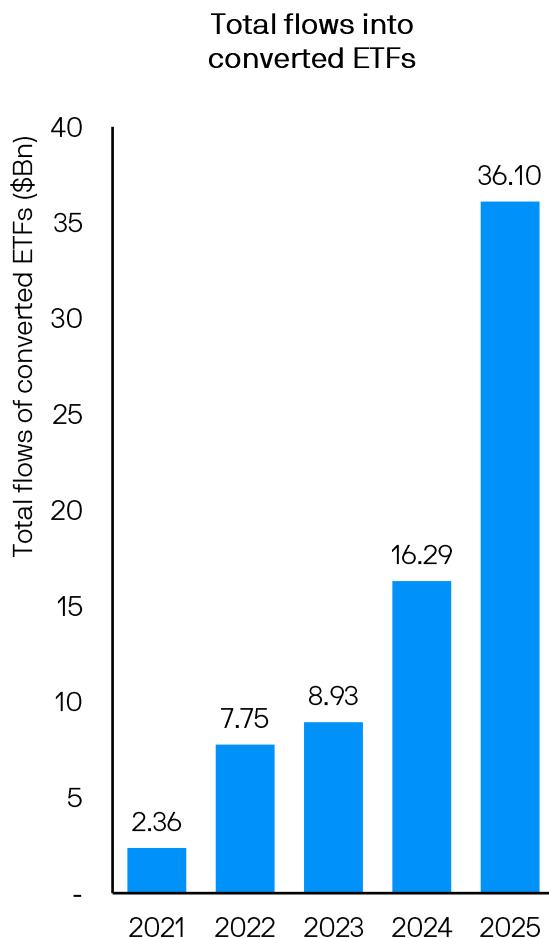
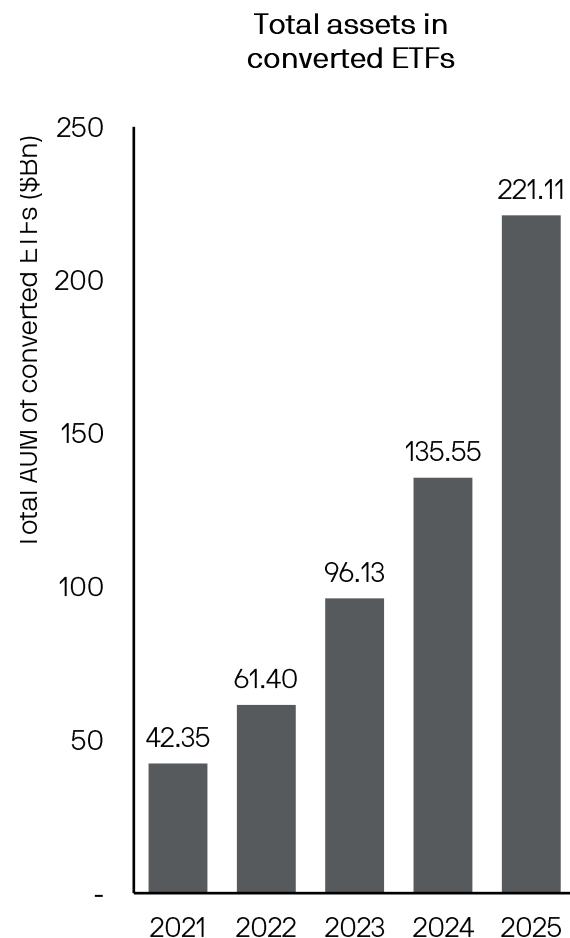
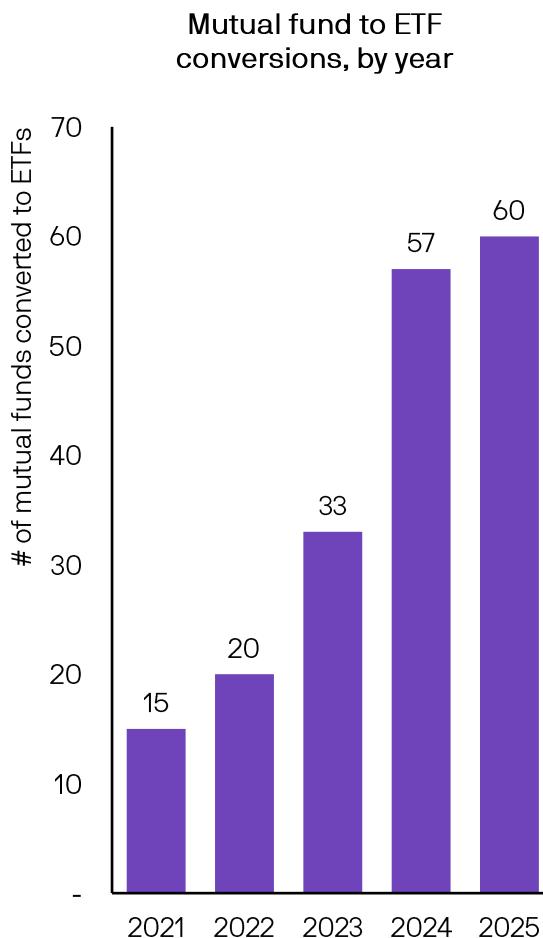
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Mutual fund to ETF conversions

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Trends



Source: Morningstar, J.P. Morgan Asset Management.
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Investment vehicle comparison

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	ETF	Mutual Fund	Separately Managed Account
Diversification	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
Tradability	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
Access to assets	Throughout the day	End of day	Throughout the day
Tax efficiency	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
Fees	Expense ratio, plus possible trading costs	Expense ratio, including 12b-1 fees, plus possible sales charge	Typically based on a percentage of account assets
Direct ownership of securities	No	No	Yes
Portfolio customization	No	No	Yes



ETF characteristics and benefits

GTE U.S. 40



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



ETF transparency allows investors to know what they own

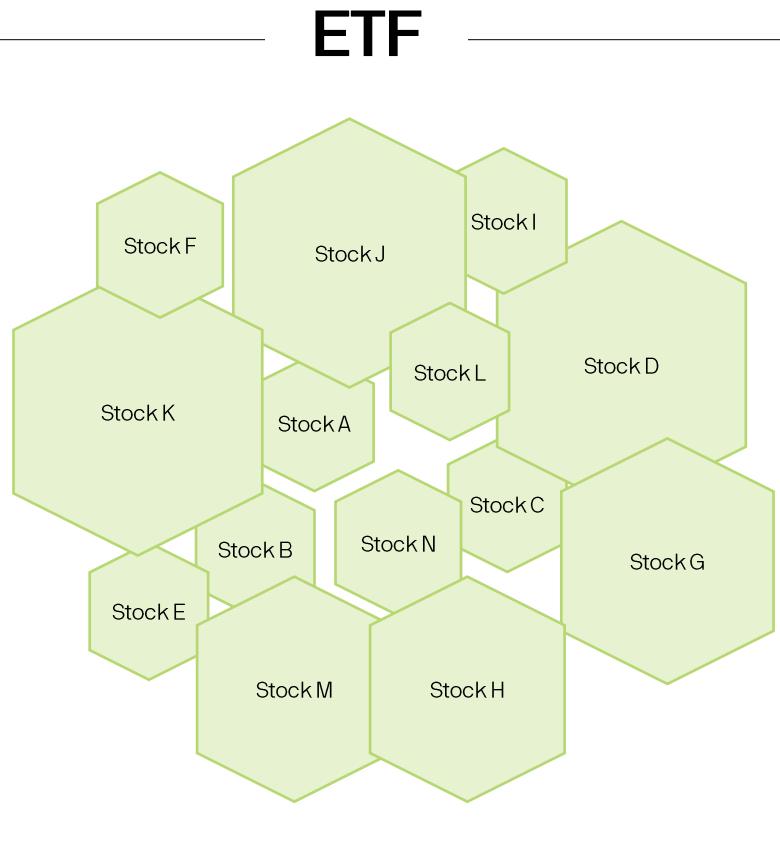
GTE

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ETF transparency allows:

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

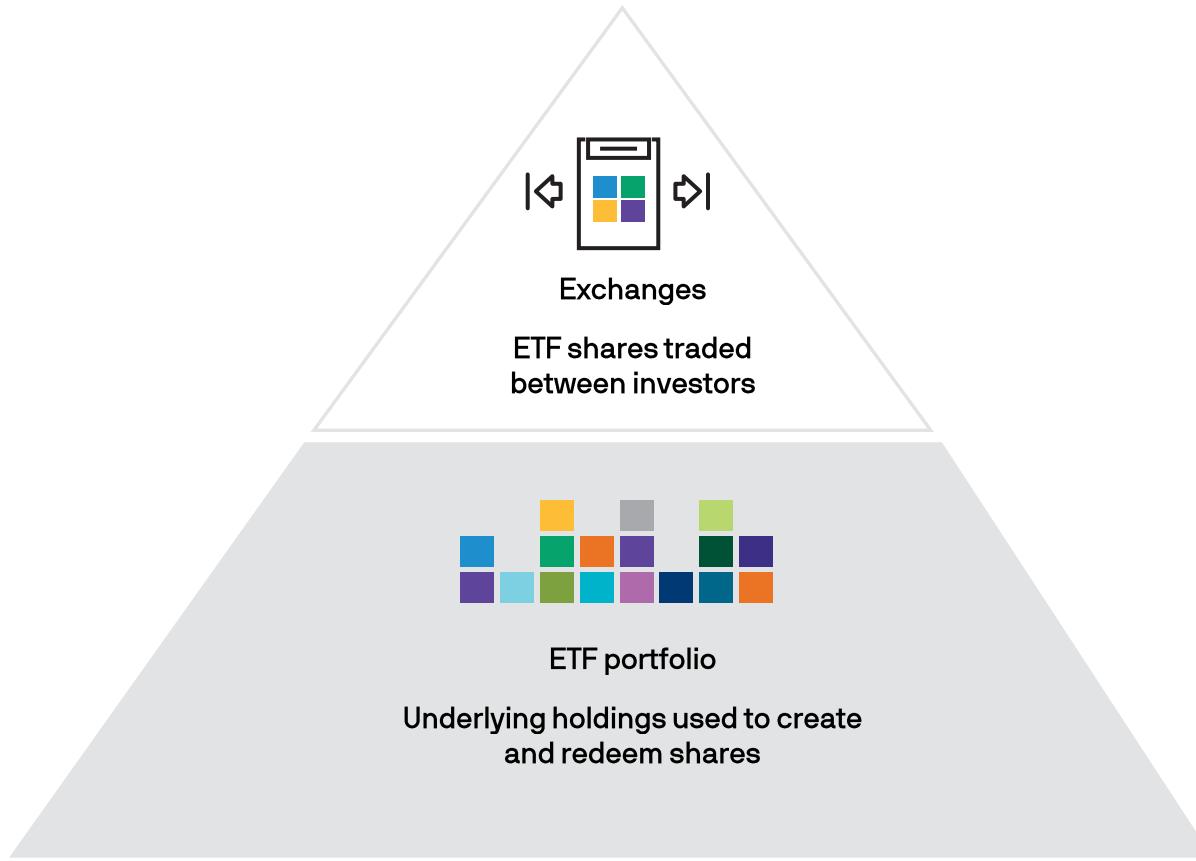




ETFs offer more liquidity than meets the eye

GTE U.S. 42

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

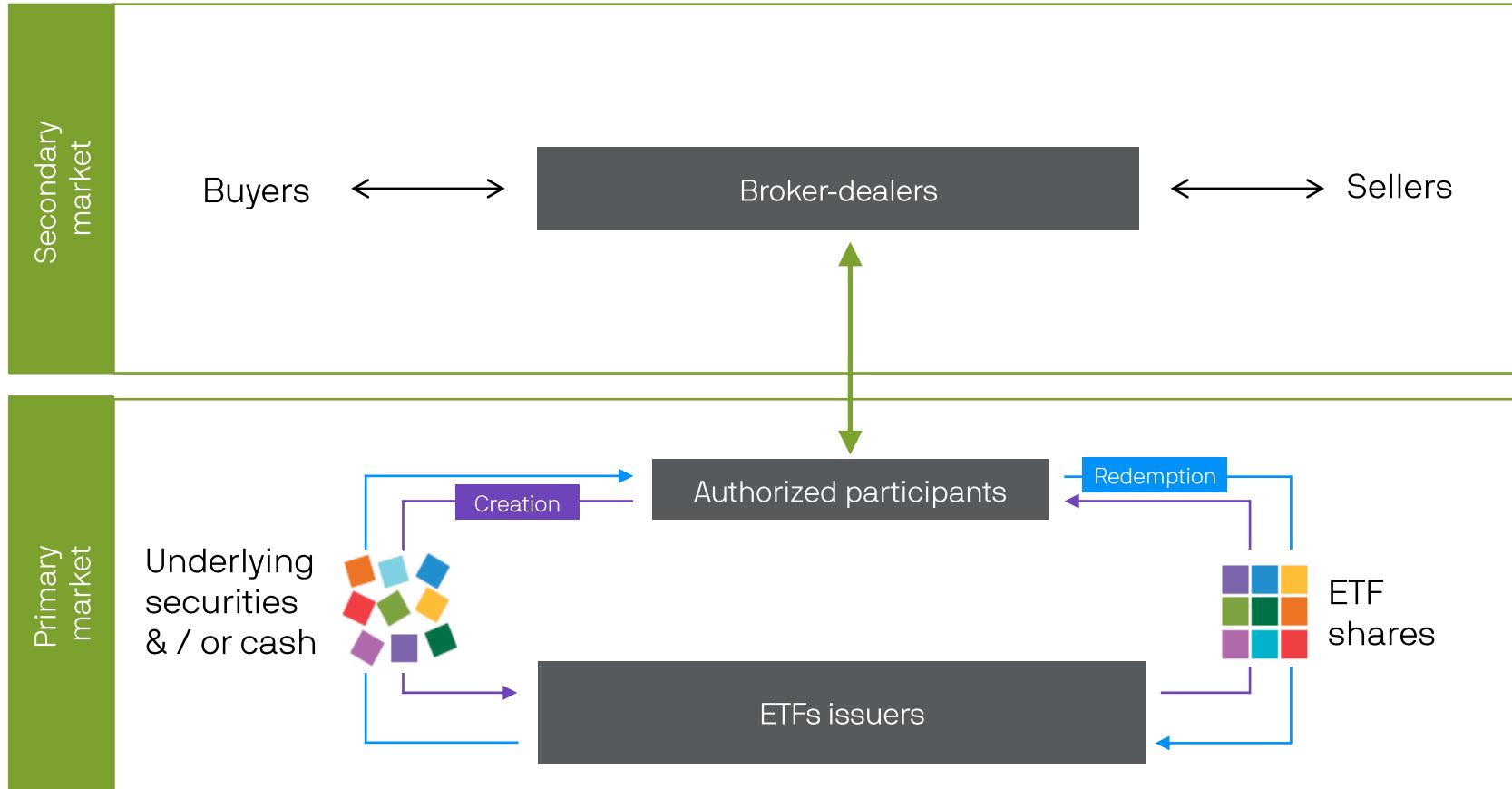
Source: Bloomberg, J.P. Morgan Asset Management; as of September 30, 2025. Top of the pyramid represents the average of the 3-month period average daily volume (ADV) for the 73 active ETFs in the category ending September 30, 2025. The bottom of the pyramid represents the average of the 3-month period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

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



How liquidity is brought to investors

Creation and redemption process across active and passive ETFs

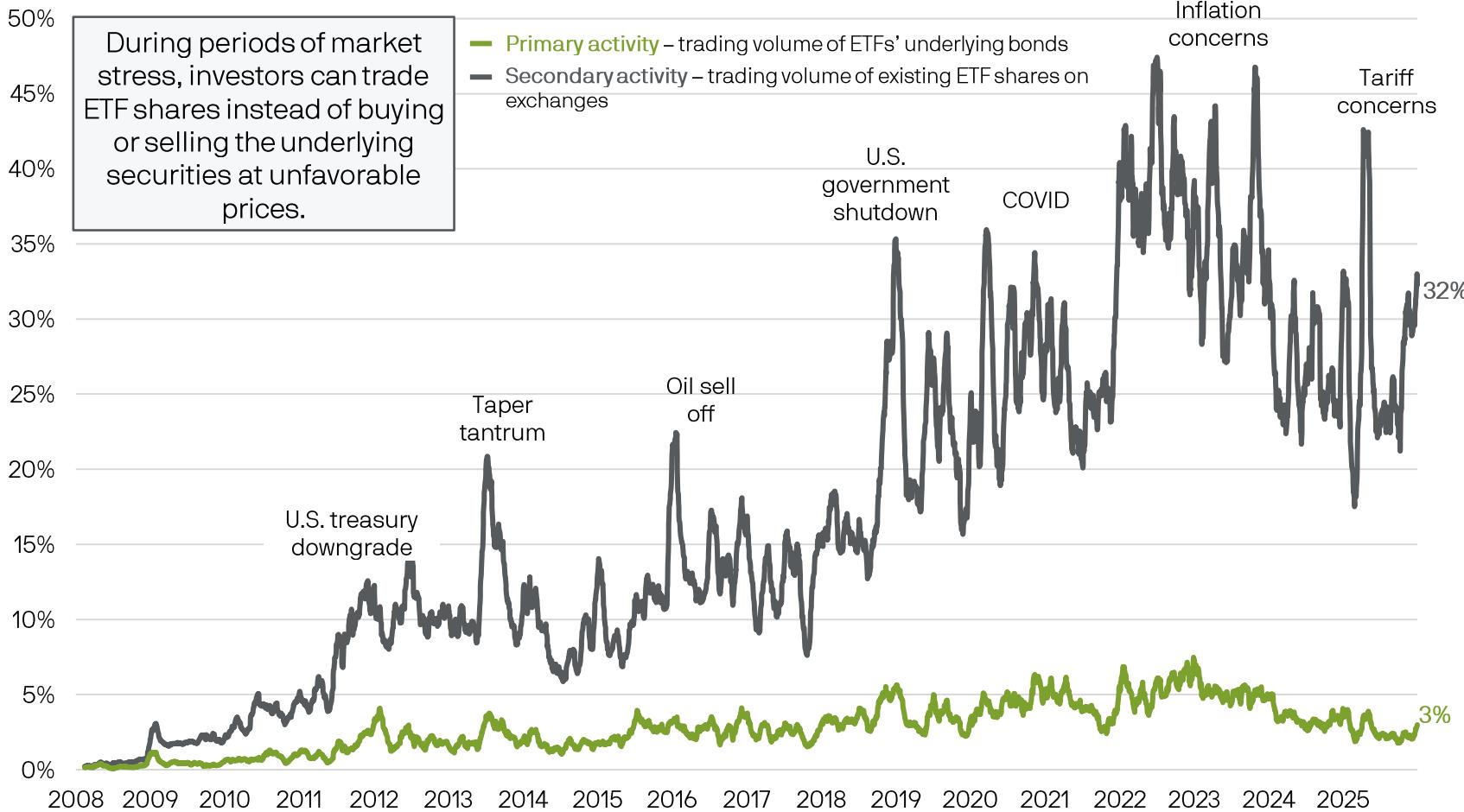




Market stress highlights ETFs' liquidity powers

GTE U.S. 44

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, HYLB, SJNK, SHGY, USHY, HYLS, 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 TRACE144a HY\$ Vol (NTMB4HYV). Guide to ETFs – U.S. Data as of December 31, 2025.

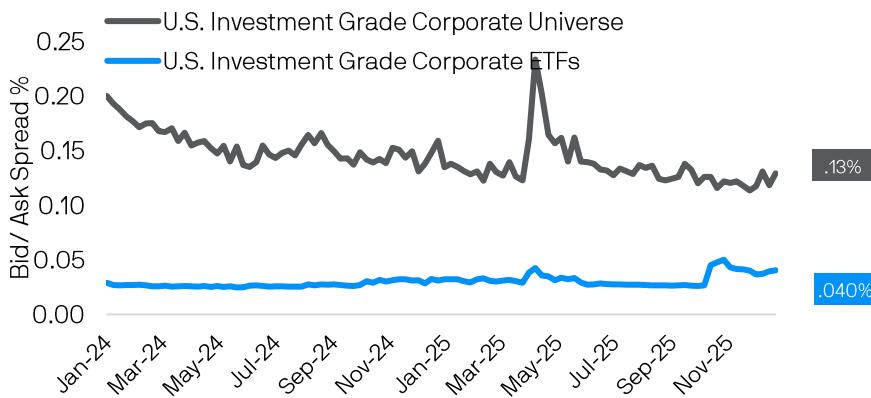
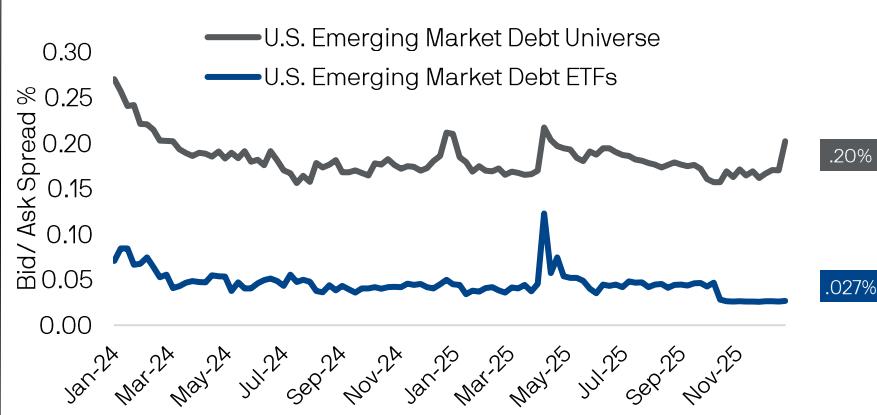
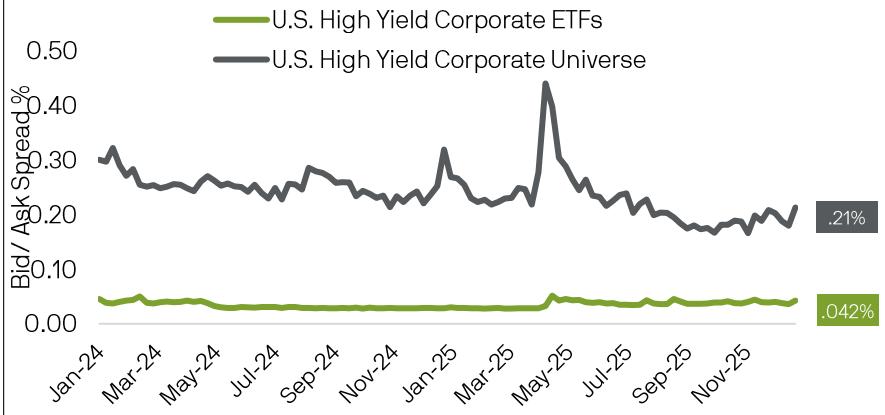
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Cost Benefits of ETFs

GTE U.S. 45

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.

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



Commons basket types used for creations and redemptions

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	Create	Redeem
Required to be published every day. Can be pro-rata or optimized and may be used for creations or redemptions	Typically optimized to improve liquidity or minimize transaction costs	Typically optimized to improve liquidity, minimize transaction costs or to improve tax efficiency
Rebalance	Restricted	Negotiated
Typically used for more efficient portfolio rebalancing which can also lead to improved tax efficiency	Similar to a Rebalance basket, but often restricted to a single AP	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

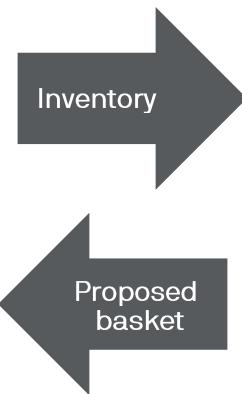
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Creation example

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



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

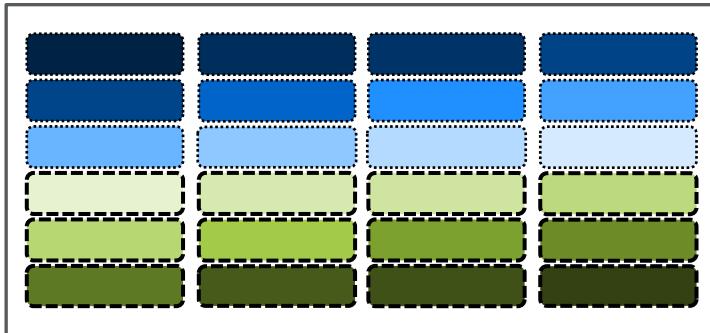


Enhanced tax efficiency through redemption baskets

GTE U.S. 48

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

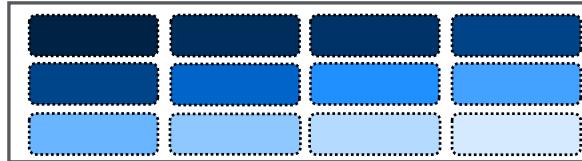
Securities with unrealized losses

Standard basket

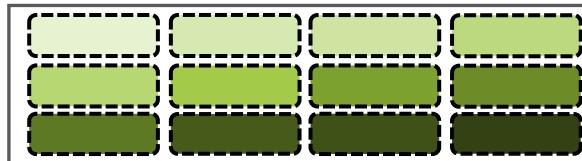
- In-kind, pro-rata slice of the portfolio
- Cash component of the basket is minimized

Redemption basket

OR



In-kind



Cash in lieu

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

GTE U.S. 49

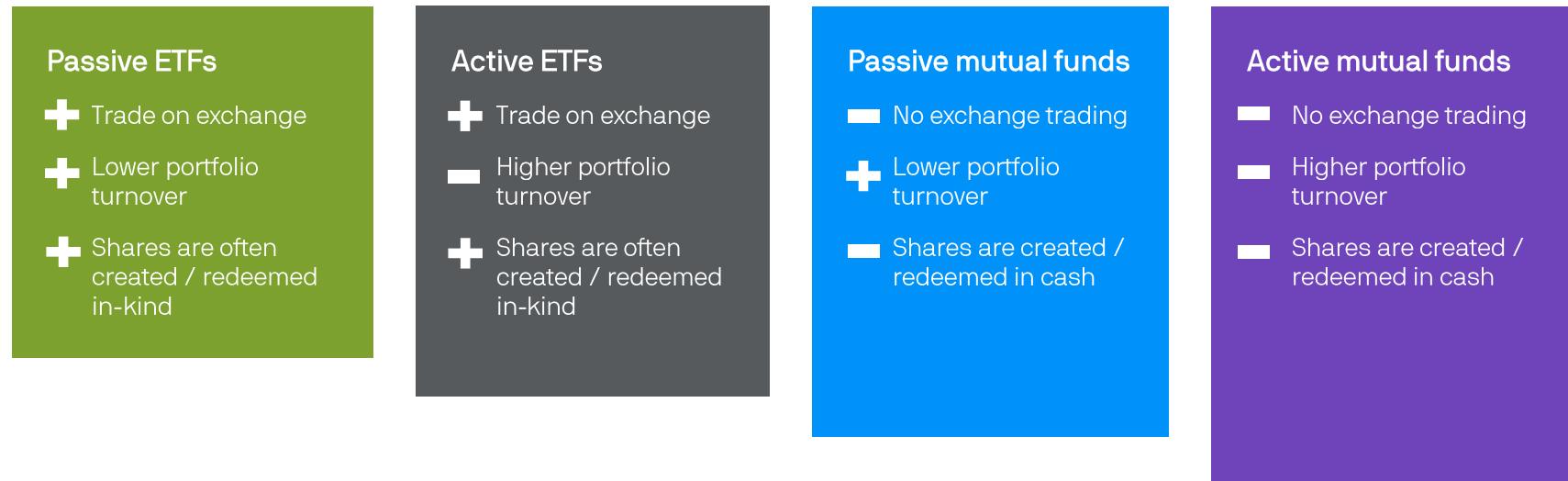
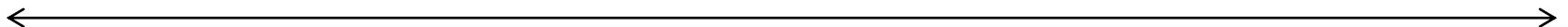
ETF wrapper allows for greater tax efficiencies than the mutual fund wrapper for two main reasons:

- 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

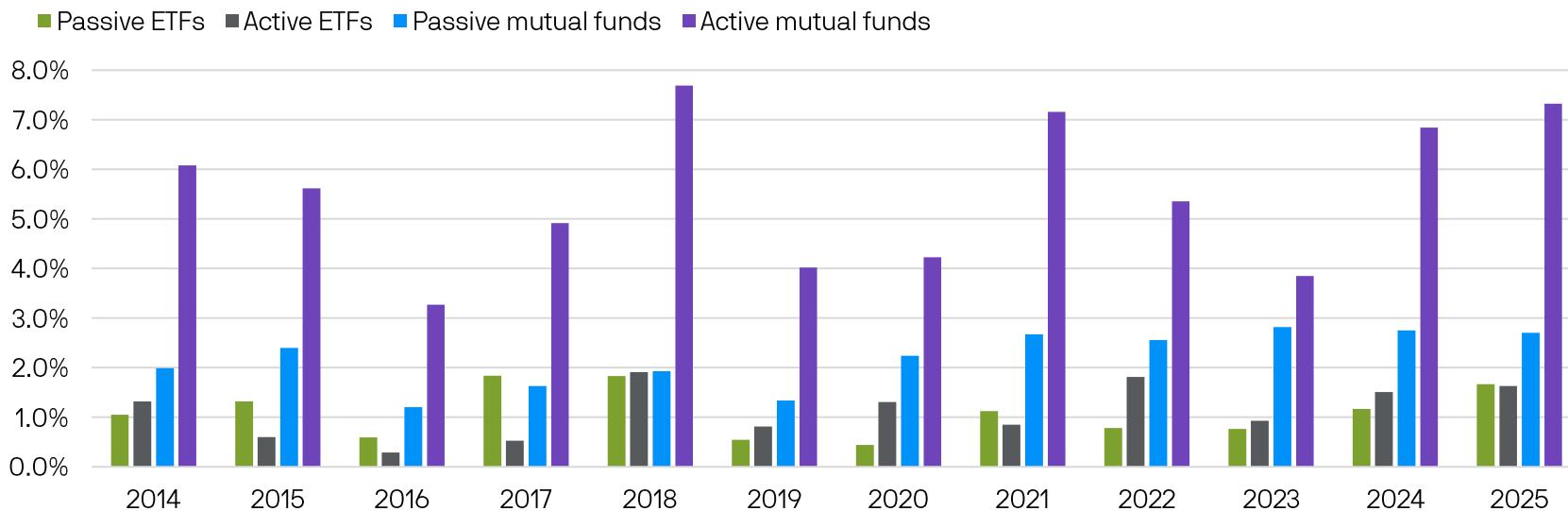




Percentage of funds paying capital gains in calendar year

GTE U.S. 50

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



Principles of ETF Investing

% 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

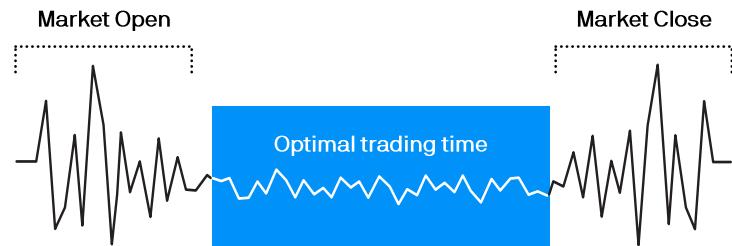
Market Order

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

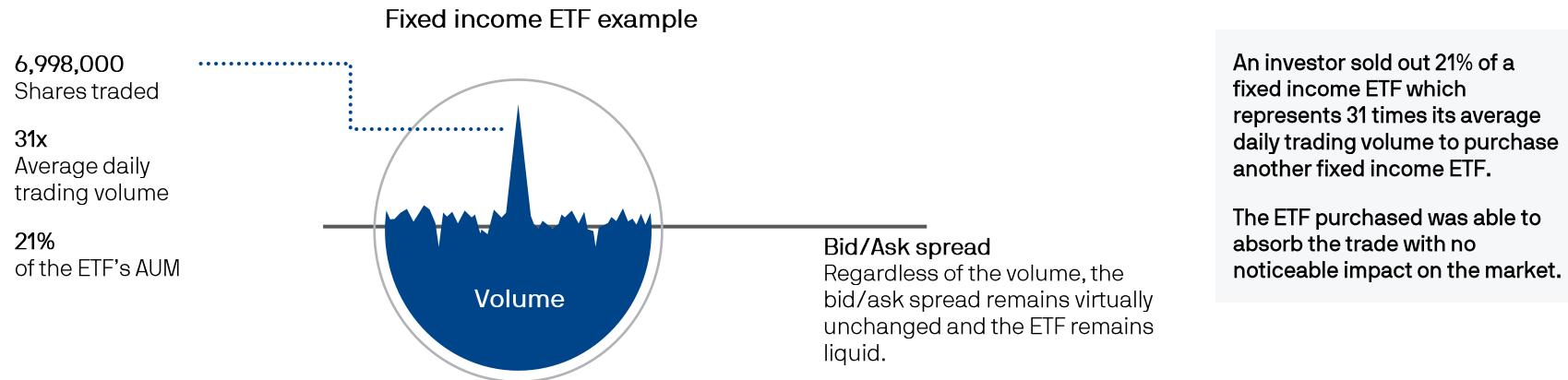
Tips to help avoid suboptimal trade execution:



- 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

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



Holding costs + Trading costs = 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

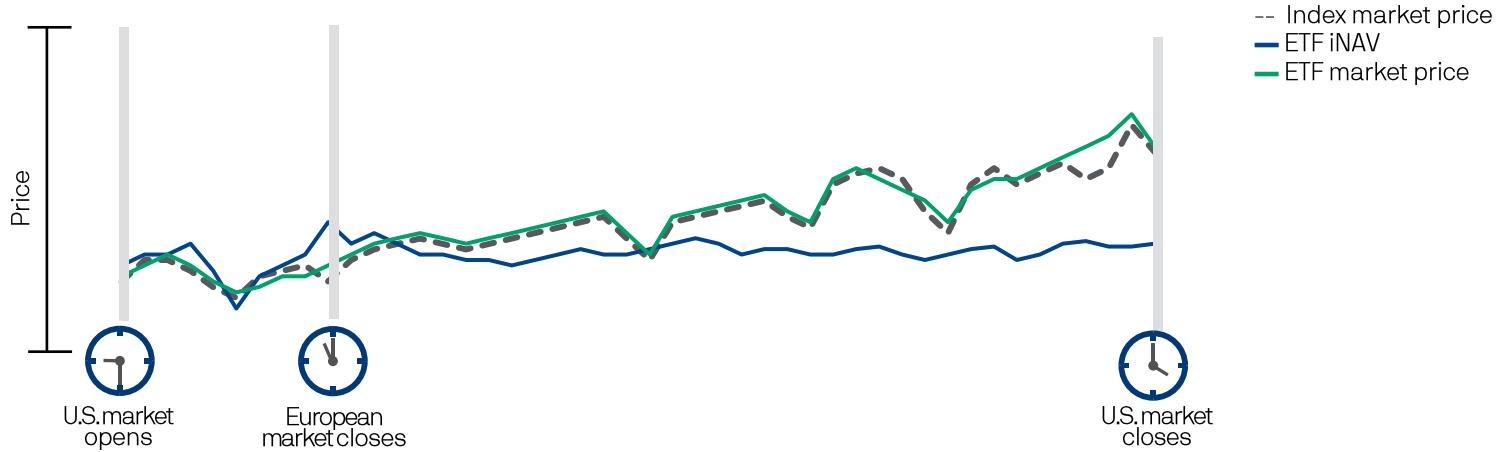


ETF premiums and discounts

GTE U.S. 54

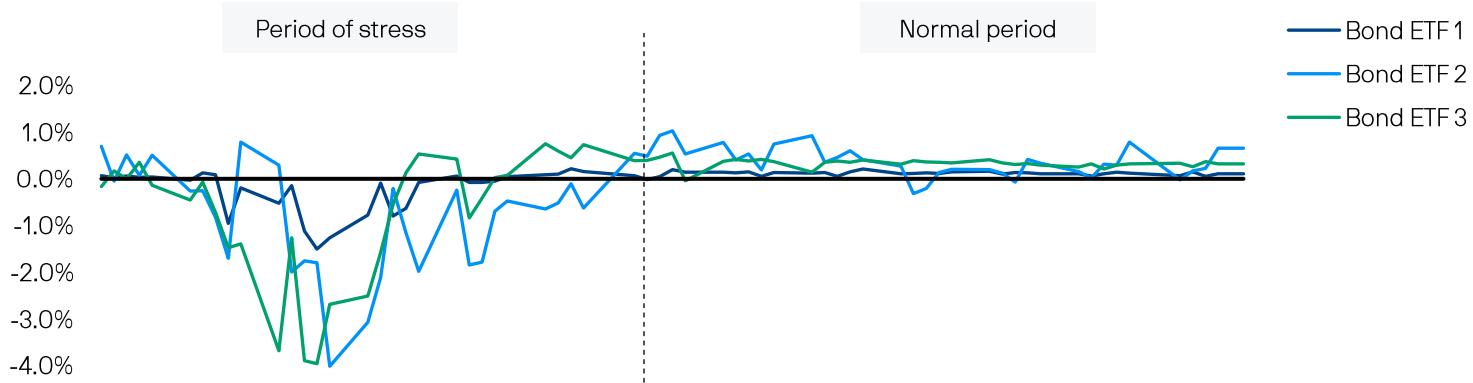
International ETFs

Hypothetical ETF that invests in European stocks



Fixed income ETFs

Hypothetical fixed income ETF premium/discount



Source: J.P. Morgan Asset Management. For illustrative purposes only. The manager seeks to achieve the stated objectives. There can be no guarantee the objectives will be met.
Guide to ETFs – U.S. Data as of December 31, 2025.



J.P. Morgan Asset Management – Risks & disclosures

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