Active and Passive Investment strategies

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Passive Investment Strategies

Index Construction · Replication · ETFs · Cost Advantage

Index Weighting Methodologies

Cap-Weighted	*S&P 500, MSCI World*	Strengths: Self-rebalancing, theoretically optimal (CAPM), low cost Weaknesses: Overweights overvalued stocks; momentum concentration
Equal-Weighted	*S&P 500 Equal Weight*	Strengths: Implicit value & small-cap tilt; historically outperforms cap-weighted Weaknesses: Higher turnover and transaction costs
Fundamental	*RAFI Fundamental Index*	Strengths: Avoids cap-weighted valuation bias; anchored to economic fundamentals Weaknesses: Higher costs; essentially a value tilt
Minimum Variance	*MSCI Min Vol*	Strengths: Exploits low-volatility anomaly; lower drawdowns Weaknesses: Requires covariance estimation; capacity constrained
Risk Parity	*Bridgewater All Weather*	Strengths: Equal risk contribution; diversification across risk drivers Weaknesses: Requires leverage; exposed in rising rate environments

The Cost Advantage of Passive Management

0.03%
Cheapest ETF TER (Institutional)

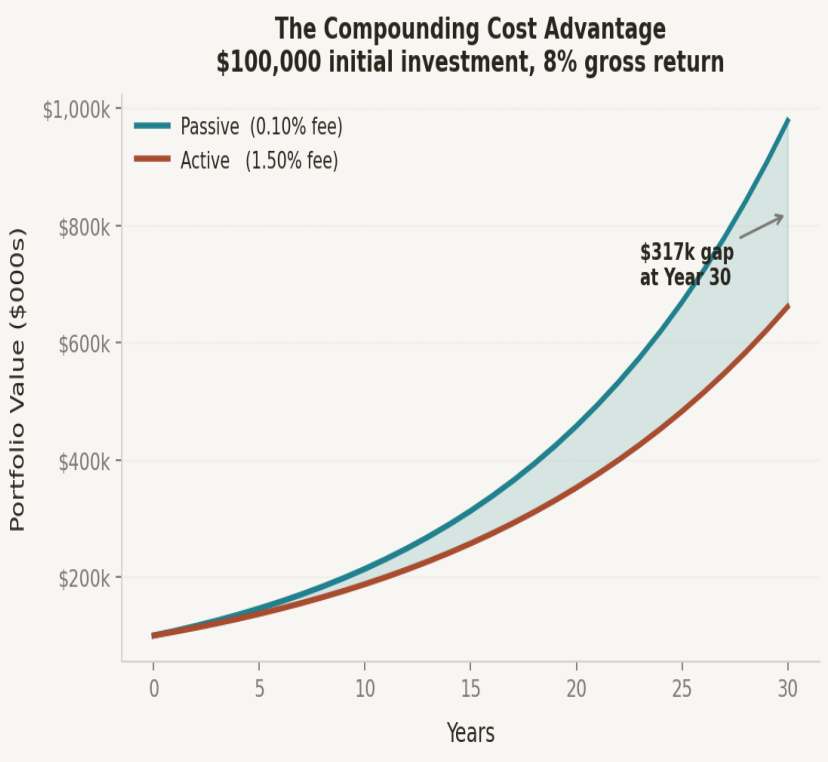
1.5%
Typical Active Equity Fee

Sharpe's Arithmetic of Active Management (1991)

"Before costs, the average active investor earns the market return.
After costs, the average active investor must underperform.
This is not a probabilistic claim — it is an accounting identity."

$220k+
Terminal wealth gap on $100k / 30 yrs

$10.5T
Global ETF AUM (2024)



Active Investment Strategies

Sources of Alpha · Active Share · Investment Styles · Attribution

Why Would Active Management Work?

01 Informational Edge

Proprietary research, industry expertise, unique datasets not yet reflected in prices. Increasingly rare in liquid markets.

02 Analytical Edge

Superior extraction of insight from public information — better models, more accurate forecasts, deeper valuation frameworks.

03 Behavioral Edge

Exploiting cognitive biases of other participants: anchoring, herding, overreaction. Requires discipline to act against sentiment.

04 Structural Edge

Profiting from institutional constraints: forced selling, index inclusions/deletions, benchmark mandates creating predictable flows.

05 Liquidity Provision

Earning illiquidity premiums by providing capital to forced sellers — distressed debt, special situations, merger arbitrage.

Active Share & Tracking Error: Four Archetypes

$$\text{Active Share} = \tfrac{1}{2} \cdot \Sigma \, |w_{\text{portfolio},i} - w_{\text{benchmark},i}|$$

Ranges 0% (identical to benchmark) → 100% (no overlap)

Key Takeaways

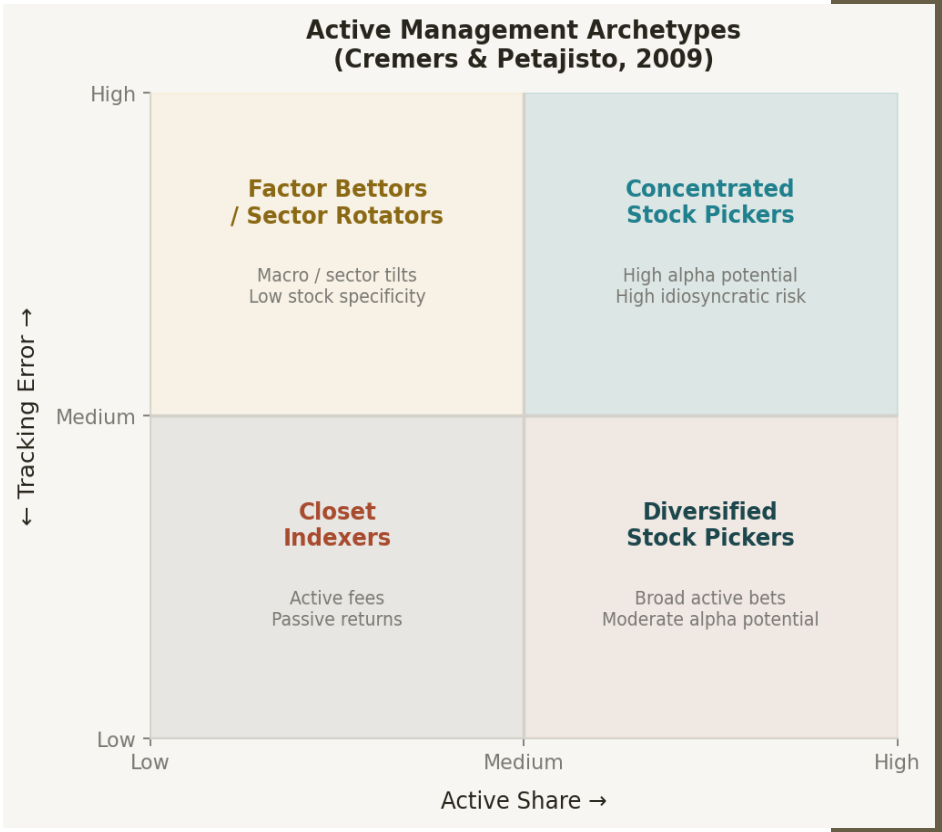
Closet indexers charge active fees but hold near-index portfolios

~20-30% of active funds estimated to be closet indexers (Petajisto, 2013)

Genuine alpha potential requires high active share

High active share + high TE = concentrated bets (high risk/reward)

Factor bets = systematic tilts without stock-level conviction



Active Management Styles

Value

Basis: Low P/E, P/B, P/CF

Example: Graham & Dodd (1934)
Warren Buffett

Risk: *Value traps; long periods of underperformance*

Growth

Basis: High revenue & earnings growth potential

Example: FAANG dominance (2010s)

Risk: *Sensitive to discount rate changes; valuation risk*

Momentum

Basis: Past 6–12 month winners continue

Example: Jegadeesh & Titman (1993)

Risk: *Crash risk at market reversals ("momentum crashes")*

Global Macro

Basis: Top-down: currencies, rates, commodities

Example: Soros, Brevan Howard

Risk: *Event risk, geopolitical sensitivity*

Event-Driven

Basis: M&A, spin-offs, restructurings, distress

Example: Merger arb, activist funds

Risk: *Deal-break risk; regulatory uncertainty*

Quantitative

Basis: Statistical models + alternative data + ML

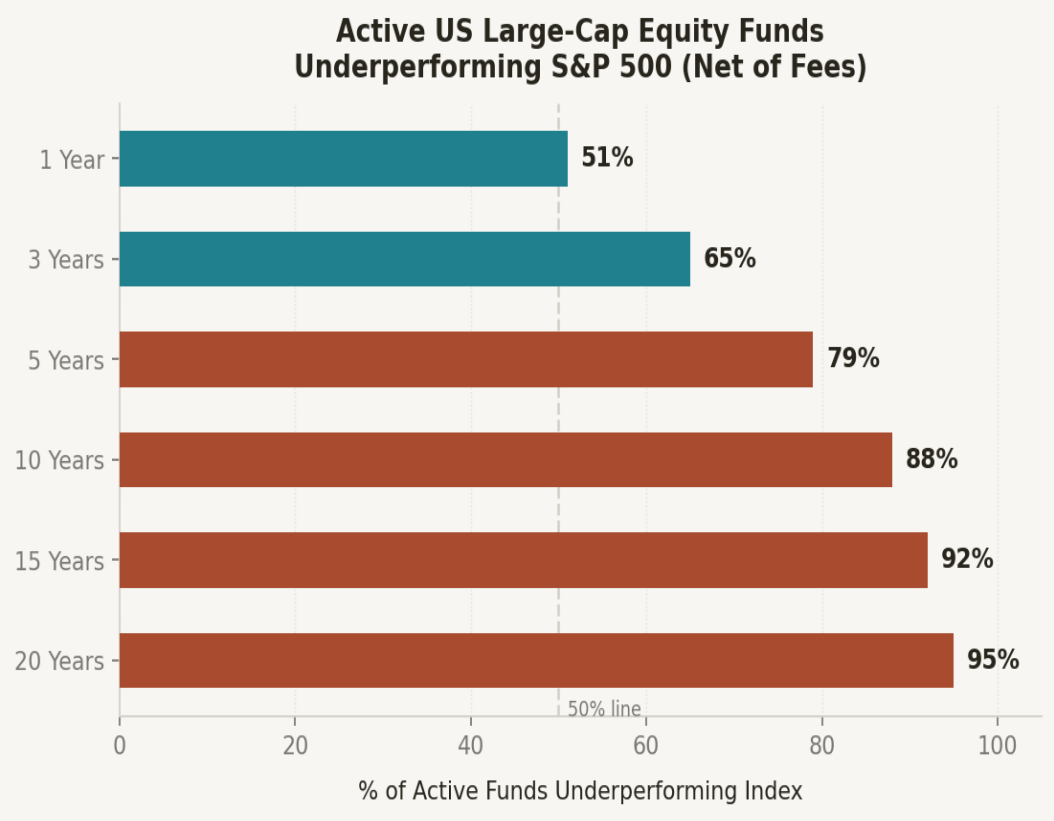
Example: Renaissance Medallion Fund

Risk: *Overfitting; factor crowding; regime changes*

Empirical Evidence

SPIVA · Jensen (1968) · Carhart (1997) · Fama-French (2010)

Active US Equity Funds vs. S&P 500 (Net of Fees)



Key Research Findings

88% of large-cap US active funds underperform over 10 years

95% underperform over 20 years — net of fees

0.5% survivorship bias overstatement (Elton et al., 1996)

~0 alpha on average before costs (Jensen, 1968)

"Beating the index consistently is extremely rare — and identifying the future outperformer in advance is essentially impossible."

Can Past Performance Predict Future Alpha?

Persistence Evidence

Carhart (1997): no performance persistence after momentum

Fama & French (2010): top tail suggests some real skill exists, but unidentifiable ex ante

Berk & Green (2004): skilled managers attract AUM until alpha is competed away

Small, concentrated funds show more persistence than large, closet indexers

The Skill vs. Luck Problem

With 10,000 managers, ~10 will beat the market 10 consecutive years by luck alone

The t-statistic threshold for genuine alpha should exceed 3.0 (Harvey, 2017)

Most published alpha disappears after costs and risk adjustment

SURVIVORSHIP BIAS

Databases that only include currently existing funds overstate performance — poorly performing funds are liquidated and disappear from records.

Estimated overstatement: ~0.5% per year
(Elton, Gruber & Blake, 1996)

WHERE SKILL CAN STILL MATTER

Small-cap & micro-cap equities (thin coverage)

Emerging & frontier market equities

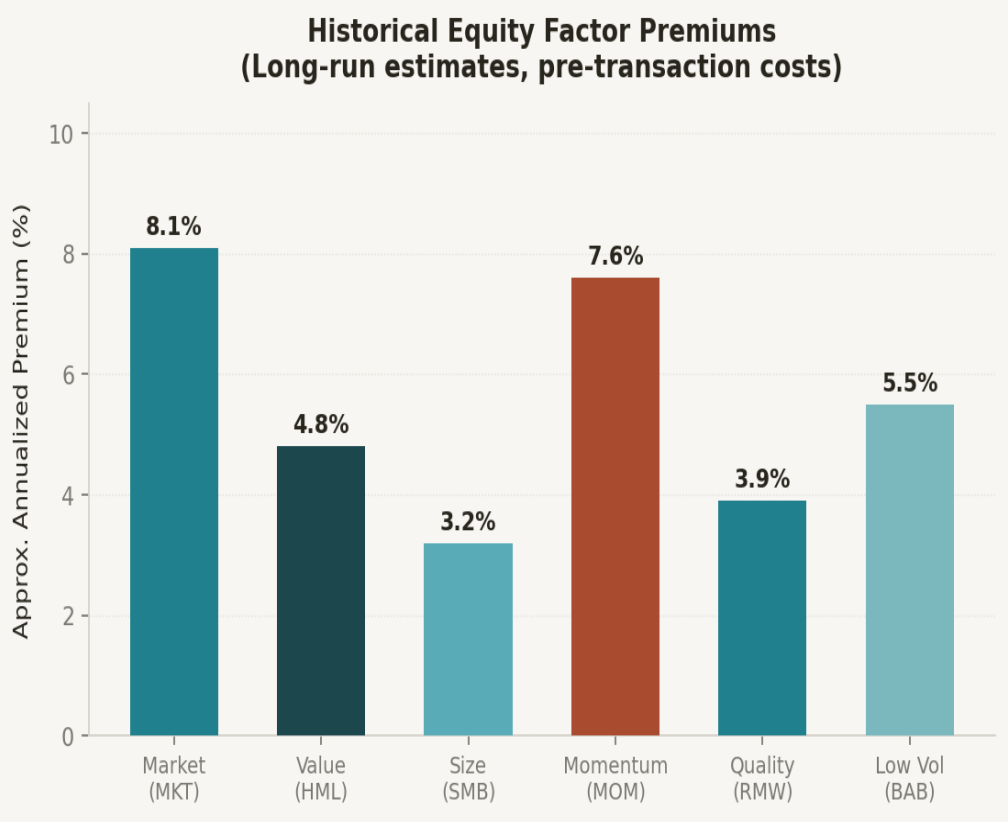
Distressed debt & special situations

Private equity / venture capital (dispersion is high)

Factor Investing & Smart Beta

The Hybrid Paradigm — Passive Structure, Active Intent

The Five Robustly Documented Equity Factors



Factor	Signal	Explanation
Value (HML) *Low P/B, P/E, P/CF*	Distressed risk / investor overextrapolation	*Neg. to Growth*
Size (SMB) *Small market cap*	Illiquidity premium + higher economic sensitivity	*Pos. to Value*
Momentum (MOM) *Past 6–12m return*	Underreaction to news / trend-following bias	*Neg. to Value*
Quality (RMW) *High profitability, low leverage*	Behavioral neglect of quality stocks	*Pos. to Value*
Low Vol (BAB) *Low beta / low variance*	Leverage constraints inflate high-beta prices	*Pos. to Quality*

Multi-Factor Portfolios & the ETF Revolution

Why Combine Factors?

Value & Momentum are negatively correlated — powerful diversification

Multi-factor blends smooth the cyclicality of individual premiums

"Integrated" approach outperforms simple "mixed" blending

IR ≈ IC · √BR — breadth across factors increases information ratio

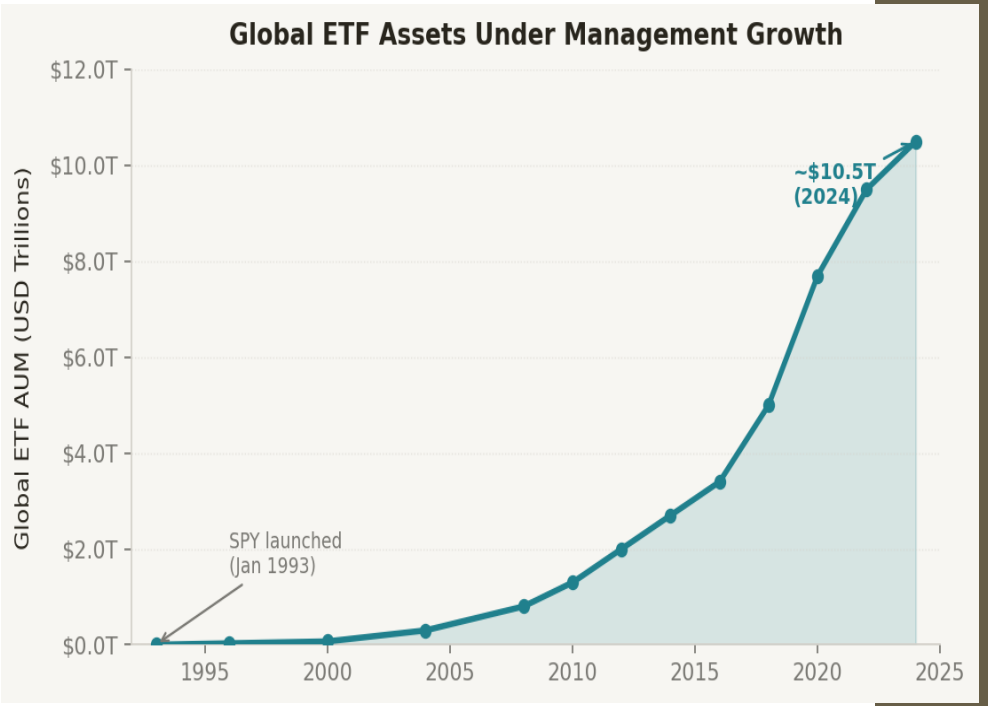
Key Challenges

Factor crowding: premiums compress as capital flows in

Factor decay: >300 published factors raise data-mining concerns

High implementation costs in small-cap / illiquid segments

Tracking error vs. cap-weight benchmark may violate mandates



Behavioral Finance

Cognitive Biases · Behavioral Alpha · Benefits of Passive Discipline

How Biases Create Mispricings — and Alpha Opportunities

Bias	Investor Effect	Market Effect	Documented Anomaly
Overconfidence	**Excessive trading, under-diversification**	Bid-ask spreads inflated by noise trading	*Individual investors underperform by ~2% pa (Barber & Odean)*
Loss Aversion	**Disposition effect: sell winners, hold losers**	Momentum; tax-loss selling seasonality	*January effect; end-of-year window dressing*
Representativeness	**Extrapolate recent trends; trend-chasing**	Initial momentum → eventual reversal	*De Bondt & Thaler (1985): 3–5yr reversal*
Herding	**Mimic peers; career risk aversion**	Bubble formation; correlated crashes	*Institutional herding documented (Wermers, 1999)*
Anchoring	**Slow adjustment to new information**	Post-earnings announcement drift	*Earnings surprises predict returns 60+ days out*

Behavioral Benefits of Passive Investing

01 Eliminates Overconfidence

Passive investors make no claim of superiority. This epistemic humility prevents the excessive trading and concentration that overconfident active investors succumb to.

02 Enforces Discipline

Index-tracking prevents panic selling at market bottoms and performance-chasing at peaks — two of the most wealth-destroying investor behaviors.

03 Removes Agency Conflicts

Active managers face career risk, short-term incentives, and window-dressing pressure. Passive strategies eliminate these principal-agent conflicts entirely.

04 DALBAR Evidence

"The average equity mutual fund investor earned ~3% per year less than the average equity mutual fund — the gap is entirely explained by behavioral timing errors." — DALBAR QAIB

The Evolving Landscape

Algorithms · ESG · Passive Ownership Concentration · The Future

Algorithmic Trading & Alternative Data

High-Frequency Trading (HFT)

HFT now accounts for >50% of US equity volume

Benefits: dramatically tighter bid-ask spreads, improved liquidity

Risks: Flash crashes (May 2010), front-running of index trades

Petajisto (2011): index reconstitution costs ~0.2% pa for S&P 500 funds

Active quant strategies must migrate to lower-frequency signals

Alternative Data Revolution

Satellite imagery, credit card transactions, social media NLP

Mobile geolocation, web traffic, earnings call sentiment analysis

ML models: deep learning, reinforcement learning, transformers

Key challenge: overfitting to noise in non-stationary financial data

Renaissance Medallion Fund

The benchmark for quant active management

>60%

Gross annual return (avg)
1988–2018

Systematic, model-driven, opaque to outsiders

High breadth: thousands of daily independent bets

Demonstrates that informational + analytical edge can persist

But: requires genius-level talent and permanent secrets

ESG: Active Choice in Passive Clothing?

ESG Screening (Passive)

Exclude sectors (tobacco, weapons, coal) from a passive index. Rules-based, low-cost, but explicitly departs from the market portfolio.

ESG-Integrated Active

Proprietary ESG analysis to overweight improving companies. Shareholder activism and engagement to drive corporate change.

Impact Investing

Intentional allocation to measurable positive outcomes. Often private/illiquid. Returns may be partially sacrificed for impact.

Research Finding (Friede, Busch & Bassen, 2015 — meta-analysis of 2,000+ studies):

"A positive ESG–performance relationship was found in the majority of studies. However, causality is difficult to establish — the relationship may reflect reverse causality (profitable firms can afford ESG) or quality factor overlap."

"The Big Three (BlackRock, Vanguard, State Street) collectively own ~20–25% of S&P 500 — raising systemic governance and anticompetitive ownership questions (Azar, Schmalz & Tecu, 2018)."

The Core-Satellite Framework

CORE

60–80% of portfolio

- Low-cost passive index funds / ETFs
- Cap-weighted equity + bond indexes
- Broad diversification, low tracking error
- Provides the majority of long-run return
- Subject to strict cost discipline (< 0.2% TER)

Key Principle: Introduce active risk only where genuine alpha exists. Replace satellites that fail to generate net-of-fee alpha over rolling 3-year windows.

SATELLITE

Small-Cap Active

Less efficient; thin analyst coverage

SATELLITE

EM Manager

Information asymmetries; structural inefficiency

SATELLITE

Factor Tilt (Value + Quality)

Rules-based; systematic risk-premium capture

SATELLITE · Hedge Fund / Alt Risk Premium

Active vs. Passive: A Decision Framework

Dimension	Favors PASSIVE	Favors ACTIVE
Market Efficiency	Large-cap, liquid, heavily covered	Small-cap, EM, illiquid, thin coverage
Cost Sensitivity	High (retail, taxable accounts)	Lower (tax-exempt institutions, HNW)
Investor Horizon	Long (10+ years, compound costs bite)	Shorter with specific catalysts
Benchmark Constraint	Strict TE constraints (pension funds)	No benchmark (endowments, SWFs)
Information Access	No unique information or edge	Proprietary data, network, expertise
ESG / Values	ESG-screened index products suffice	Active engagement & shareholder activism
Complexity Tolerance	Low — simplicity is a virtue	High — can evaluate complex strategies

Key Formulas at a Glance

Portfolio Expected Return (Markowitz)

$$E(R_p) = \sum w_i \cdot \mu_i$$

Portfolio Variance (Markowitz)

$$\sigma^2_p = \sum_i \sum_j w_i \cdot w_j \cdot \sigma_{ij}$$

CAPM Security Market Line (Sharpe 1964)

$$E(R_i) = r_f + \beta_i \cdot [E(R_m) - r_f]$$

CAPM Beta

$$\beta_i = Cov(R_i, R_m) / Var(R_m)$$

Fama-French 3-Factor Model (1993)

$$E(R_i) - r_f = \alpha_i + \beta_i \cdot MKT + s_i \cdot SMB + h_i \cdot HML$$

Active Share (Cremers & Petajisto, 2009)

$$\text{Active Share} = \tfrac{1}{2} \cdot \sum |w_{p,i} - w_{b,i}|$$

Information Ratio

$$IR = \alpha / \sigma_\alpha$$ (alpha divided by tracking error)

Fundamental Law of Active Mgmt (Grinold 1989)

$$IR \approx IC \cdot \sqrt{BR}$$ (skill × breadth)

Landmark Papers in Portfolio Theory

1952
Markowitz
Portfolio Selection

1958
Tobin
Separation Theorem

1964
Sharpe
CAPM

1970
Fama
EMH

1976
Ross
APT

1980
Grossman-
Stiglitz Paradox

1993
Fama-French
3-Factor Model

1997
Carhart
4-Factor

2005
Arnott
Fundamental Index

2009
Cremers-
Petajisto Active
Share

Summary of Core Arguments

01 Markowitz & CAPM

Diversification eliminates idiosyncratic risk; only systematic risk earns compensation. The market portfolio is theoretically optimal — the bedrock of passive investing.

02 Efficient Markets

Semi-strong EMH implies active management cannot consistently beat the market using public information. The Grossman-Stiglitz paradox prevents perfect efficiency.

03 Passive Strategies

Cost advantage is structural and permanent. Sharpe's arithmetic guarantees average active underperformance net of fees. ETFs democratized low-cost access.

04 Active Strategies

Alpha requires informational, analytical, behavioral, or structural edge. The Fundamental Law shows that skill × breadth = information ratio. Most funds are closet indexers.

05 Empirical Evidence

85–90% of large-cap active funds underperform over 10 years. Skilled managers exist but cannot be identified reliably ex ante. Less efficient markets offer more scope.

06 Factor Investing

Systematic factors (value, momentum, quality, low vol, size) offer documented premiums. Multi-factor diversification improves risk-adjusted outcomes. Crowding is a real risk.

The Paradox of the Passive Revolution

↔	**More passive investing → Less competition in less efficient segments**	→	***Creates better opportunities for genuine active managers in small-cap, EM, and illiquid markets***
↔	**Big Three own 20–25% of S&P 500 as passive shareholders**	→	***But have limited incentive to do costly governance work → potential corporate governance vacuum***
↔	**Factor anomalies become widely known and investable**	→	***Capital floods in → premium compresses → the very act of publishing destroys the opportunity***
↔	**Passive is cheapest in liquid markets**	→	***Yet the highest value-add from active management is in illiquid, private, and niche markets***

Conclusion

1. Neither active nor passive management universally dominates. The optimal choice depends on market efficiency, investor costs, skill, and horizon.

2. Sharpe's arithmetic is inescapable: the average active fund must underperform by its costs. Most investors should hold a low-cost passive core.

3. Factor investing occupies the productive middle ground — systematic, evidence-based, rules-driven — capturing documented premiums without discretionary stock-picking.

4. Behavioral finance explains why passive discipline has underappreciated value: it eliminates overconfidence, enforces long-term focus, and removes agency conflicts.

5. The future belongs to sophisticated allocators: passive beta efficiently deployed, factor premiums systematically harvested, and active management reserved for genuinely differentiated niches.

Appendix: Market Efficiency Spectrum by Asset Class

← MORE EFFICIENT (favor passive) LESS EFFICIENT (favor active) →

Note: Efficiency spectrum is approximate. Transaction costs, licensing, and capacity constraints must be weighed even in less efficient markets.