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ADVISOR SYMPOSIUM

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NEWPORT BEACH

Is Your Alpha Big Enough To Cover Its Taxes?

The active management dichotomy.

Robert H. Jeffrey and Robert D. Arnott

After-Tax Return

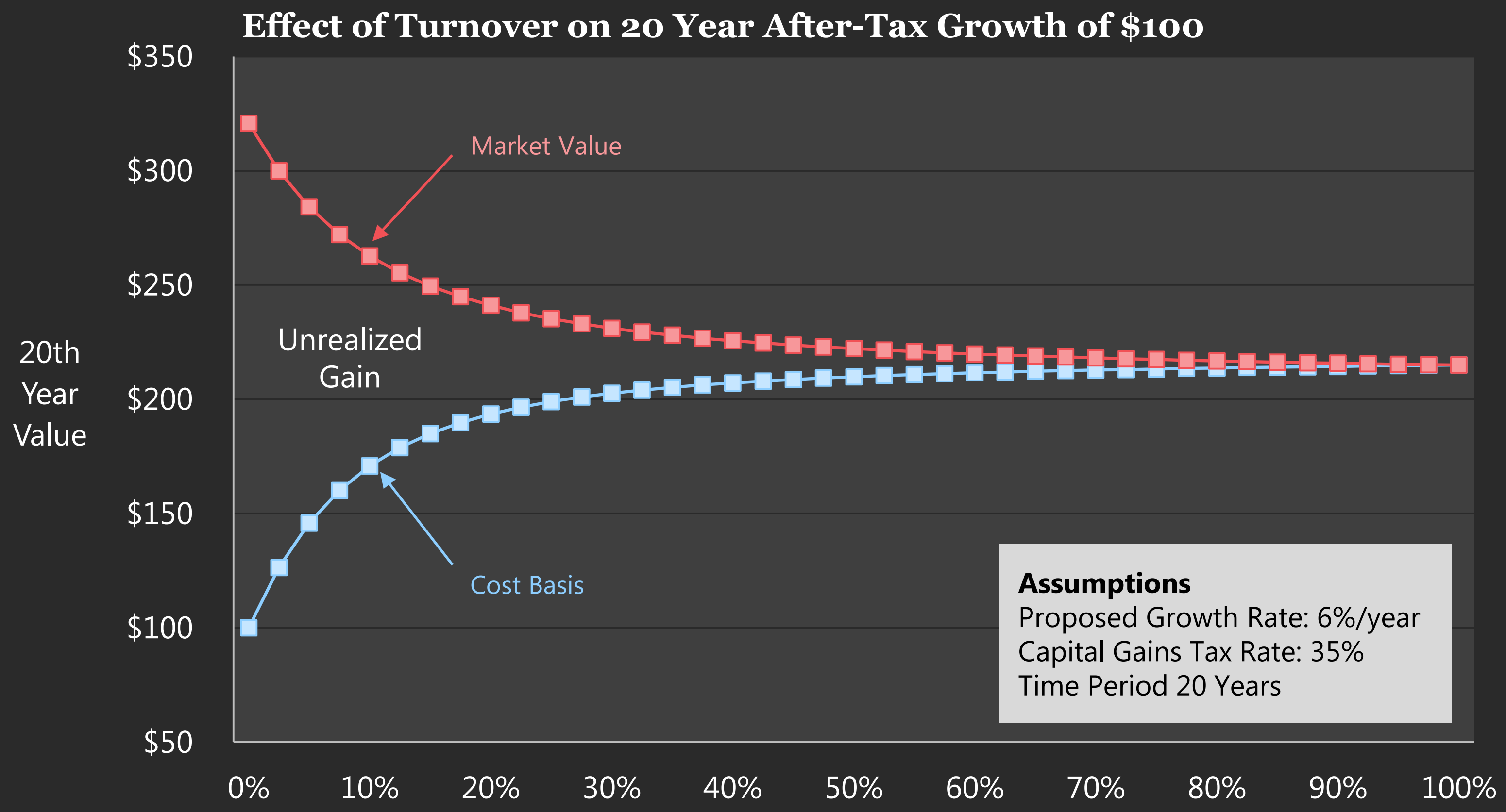
Gross-of-Fees Return – *Fees* – *Taxes on Capital Gains and Dividends* – *Taxes on Capital Gains after Liquidation*

$$\text{Gross-of-Fees Return} \underbrace{- \text{ Fees} - \text{Taxes on Capital Gains and Dividends} - \text{Taxes on Capital Gains after Liquidation}}_{\text{“Tax Alpha”}}$$

» The “Tax Alpha” is always negative. Goal is to shrink the “Tax Alpha” drag, ideally without forfeiting pretax alpha.

» Bogle [1997] compared unrealized capital gains to a free loan from the IRS.

Turnover's Impact on Taxes



» The marginal impact of taxes is most severe at very low turnover.

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993.

Alpha Required to Overcome Turnover

Turnover	Alpha Needed to Breakeven
5%	70 bps
10%	120 bps
25%	215 bps
50%	278 bps
=>100%	323 bps

**Assumes 6% annual growth rate and 35% capital gains tax rate.*

» At just 5% turnover, 70 bps of alpha is needed to offset taxes.

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993.

Active Managers That Outperform

» Number of large active equity mutual funds that outperformed the index fund (1982-1991).
  - Beating the benchmark is difficult for active managers after fees.

Return Type	#
Pretax	15 of 71

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993. Index fund is the Vanguard 500.

Active Managers That Outperform

» Number of large active equity mutual funds that outperformed the index fund (1982-1991).
  – It's even more difficult after taking capital gains taxes into consideration.

Return Type	#
Pretax	15 of 71
After Capital Gains Tax	10 of 71

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993. Index fund is the Vanguard 500.

Active Managers That Outperform

» Number of large active equity mutual funds that outperformed the index fund (1982-1991).

 – … and dividend taxes.

Return Type	#
Pretax	15 of 71
After Capital Gains Tax	10 of 71
After Capital Gains and Dividend Taxes	9 of 71

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993. Index fund is the Vanguard 500.

Active Managers That Outperform

» Number of large active equity mutual funds that outperformed the index fund (1982-1991).
  – Upon liquidation, the index fund pays taxes on a large proportion of embedded capital gains.

Return Type	#
Pretax	15 of 71
After Capital Gains Tax	10 of 71
After Capital Gains and Dividend Taxes	9 of 71
After All Taxes Including Deferred	13 of 71

Source: Jeffrey and Arnott, Journal of Portfolio Management, Spring 1993. Index fund is the Vanguard 500.

What’s New Since 1993?

Tax Advantaged Investing

Deferral of Capital Gains

Holding Period Management

Loss Harvesting

Dividend Avoidance

Lot Selection

Yield Management

Wash-Sale Management

And the list goes on…

» Tax advantaged investing is now a well-established part of the asset management business (though not as large as it should be!).

Using Tax-Efficient Investment Vehicles

» Exchange-traded funds (ETFs) and exchanged traded notes (ETNs) (and to a lesser extent long-dated swaps) offer long-term investors a powerful tool for tax efficiency.

- 1993: Jeffrey & Arnott publish paper
- 1993: First US ETF
- 1993: First value ETF
- 2002: First ETN
- 2002: First bond ETF
- 2003: First smart beta ETF
- 2004: Fundamental Index™ is launched
- 2008: Towers Watson coins "Smart Beta" label
- 2008: First active ETF
- 2010: US ETFs hit $1T in assets
- 2011: First low vol ETF
- 2015: Smart beta ETFs hit $500B AUM

Source: Research Affiliates. Vanguard. Morningstar. Financial Times.

Smart Beta: A New Path to After-Tax Alpha

» Some smart beta strategies offer very low turnover, large capacity, and rebalancing alpha that seems robust.

- 1993: Jeffrey & Arnott publish paper
- 1993: First US ETF
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- 2003: First smart beta ETF
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Source: Research Affiliates. Vanguard. Morningstar. Financial Times.

What Hasn’t Changed?

Persistent Alpha is Still Fleeting

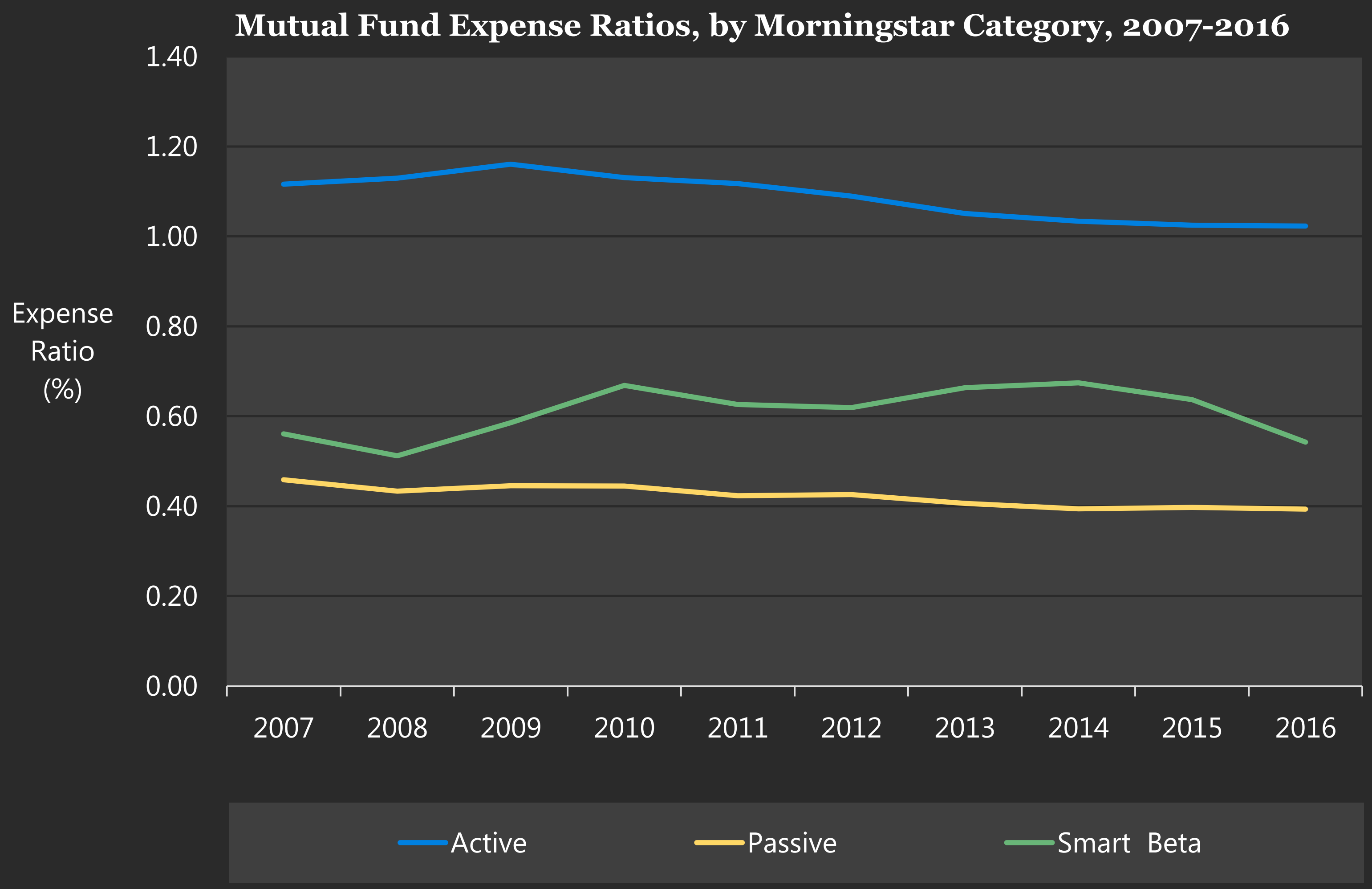
Time-Horizon	Percentage of US Large-Cap Funds That Underperformed The S&P 500
Five-Year	82.4%
Three-Year	81.9%
One-Year	56.6%

**Data as of June 30, 2017*

- Capitalization-weighted indexes are still hard to beat … for most active managers. Why?
- Fees? Trading costs? Anchoring on cap weight? Chasing fads?

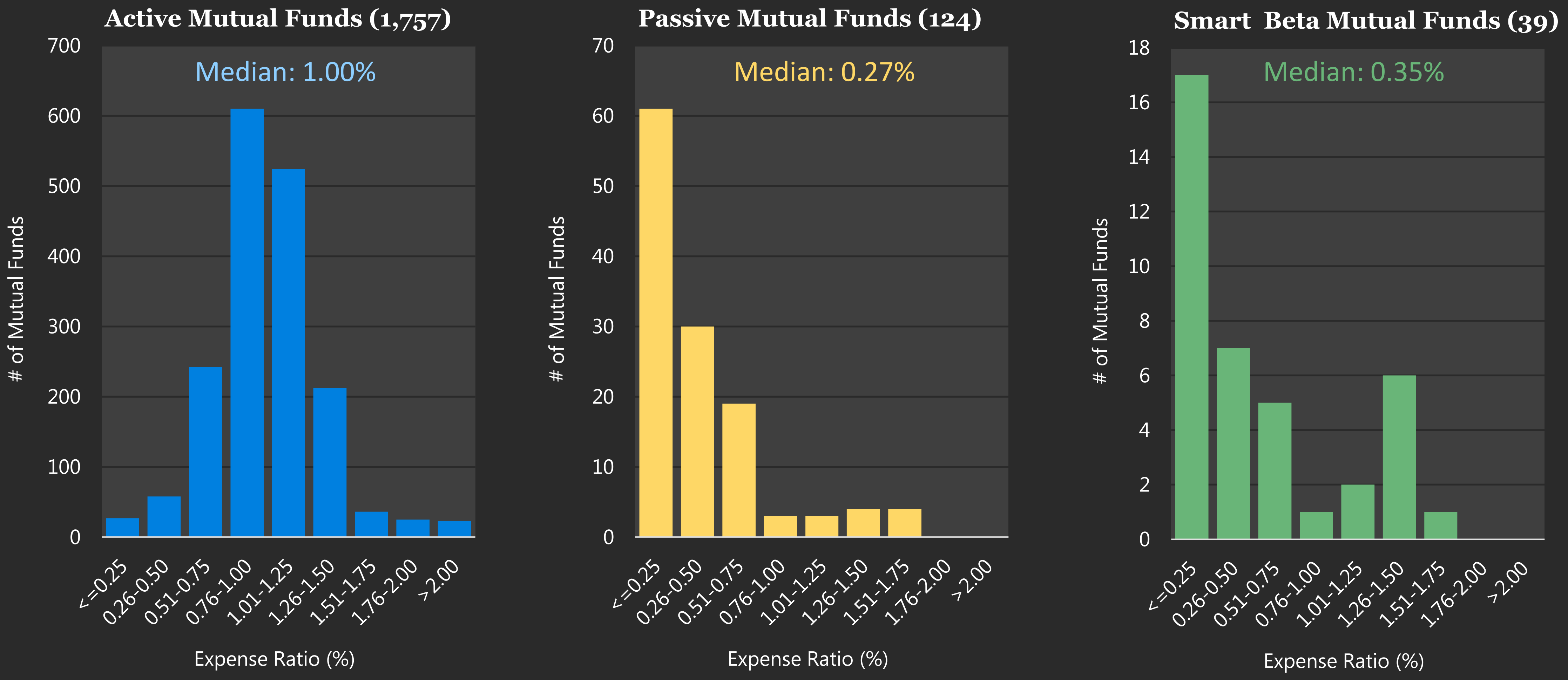
Source: S&P Dow Jones Indices.

Active Manager Fees are Still High



Source: Research Affiliates using data from Morningstar Direct. US equity funds.

Active Manager Fees are Still High



Source: Research Affiliates using data from Morningstar Direct. US equity funds, 2007-2016.

Finding Tax-Efficient Active Managers

Fund Characteristics and Taxes, 2008-2017

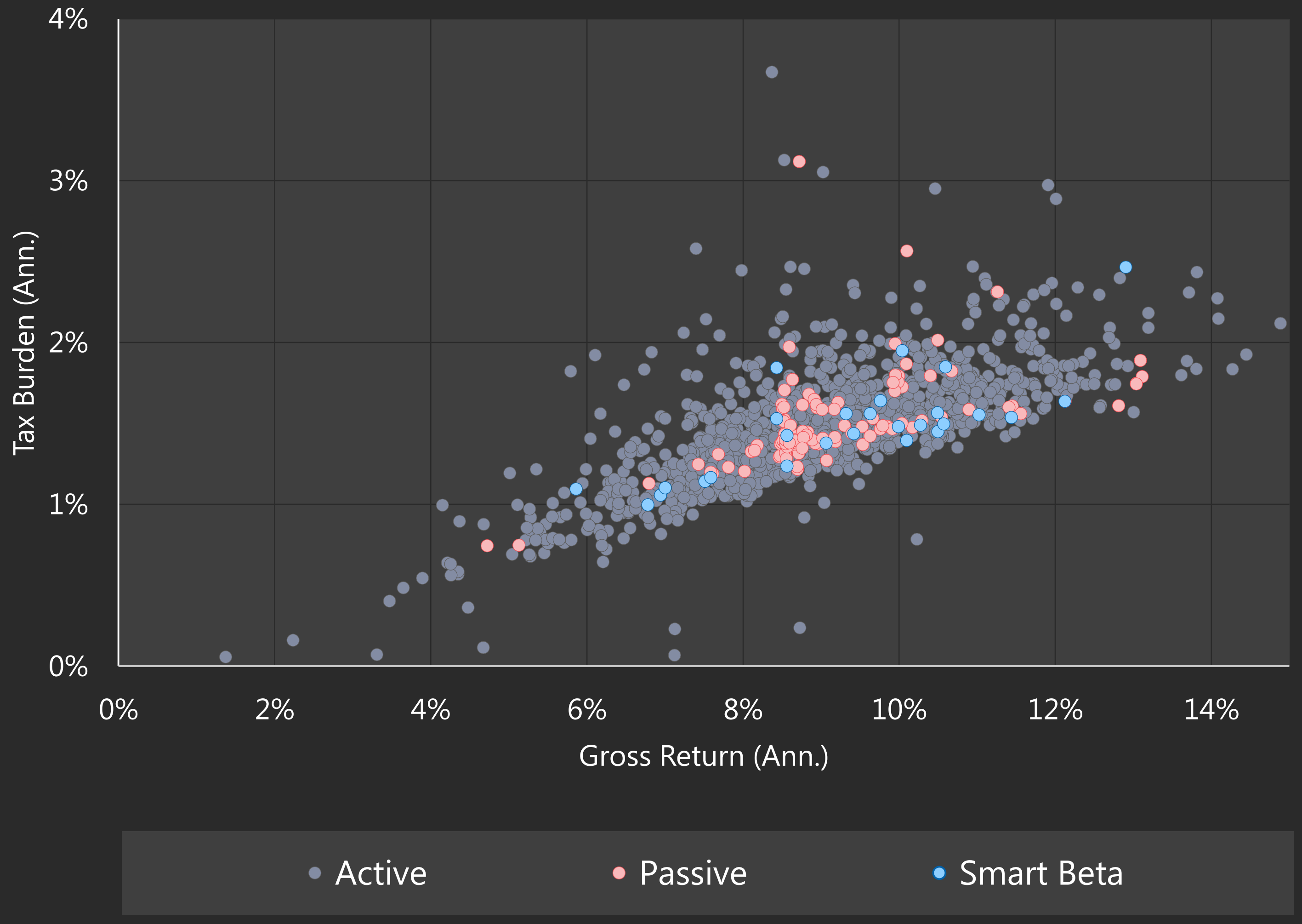
Characteristics	"Tax Alpha" (aka Tax Burden)	T-Stat
Gross Return, Matching Period	16.73% x Avg. Ann. Ret.	26.84****

**10-Yr Annualized Post-Liquidation Tax Burden, Surviving U.S. Active Mutual Funds*

» Higher gross returns lead to higher tax burdens.

Source: Research Affiliates using data from Morningstar Direct.

Higher Returns Lead to Higher Taxes



Source: Research Affiliates using data from Morningstar Direct. US equity funds, 2008-2017.

Fund Characteristics and Taxes, 2008-2017

Characteristics	"Tax Alpha" (aka Tax Burden)	T-Stat
Gross Return, Matching Period	16.73% x Avg. Ann. Ret.	26.84***
Turnover Ratio, Matching Period	0.21% x Turnover Ratio (21% x % Turnover)	10.51***

**10-Yr Annualized Post-Liquidation Tax Burden, Surviving U.S. Active Mutual Funds*

» Higher turnover leads to higher tax burdens.

Source: Research Affiliates using data from Morningstar Direct.

Fund Characteristics and Taxes, 2008-2017

Characteristics	"Tax Alpha" (aka Tax Burden)	T-Stat
Gross Return, Matching Period	16.73% x Avg. Ann. Ret.	26.84***
Turnover Ratio, Matching Period	0.21% x Turnover Ratio (21% x % Turnover)	10.51***
Dividend Yield, Matching Period	12.37% x Div. Yield	4.65***

**10-Yr Annualized Post-Liquidation Tax Burden, Surviving U.S. Active Mutual Funds*

» Higher dividend yield leads to higher tax burdens.

Source: Research Affiliates using data from Morningstar Direct.

Fund Characteristics and Taxes, 2008-2017

Characteristics	"Tax Alpha" (aka Tax Burden)	T-Stat
Gross Return, Matching Period	16.73% x Avg. Ann. Ret.	26.84***
Turnover Ratio, Matching Period	0.21% x Turnover Ratio (21% x % Turnover)	10.51***
Dividend Yield, Matching Period	12.37% x Div. Yield	4.65***
Fund Size (Log AUM), Matching Period	11.19% per 10x Inc. in AUM	8.68***

**10-Yr Annualized Post-Liquidation Tax Burden, Surviving U.S. Active Mutual Funds*

» Larger funds lead to higher tax burdens.

Source: Research Affiliates using data from Morningstar Direct.

Fund Characteristics and Taxes, 1993-2017

Characteristics	"Tax Alpha" (aka Tax Burden)	T-Stat
Gross Return, Matching Period	1.57% x Avg. Ann. Ret.	12.89***
Turnover Ratio, Matching Period	0.30% x Turnover Ratio (30% x % Turnover)	17.79***
Dividend Yield, Matching Period	10.45% x Div. Yield	6.47***
Fund Size (Log AUM), Matching Period	1.51% per 10x Inc. in AUM	1.27

**25-Yr Year-by-Year Pre-Liquidation Tax Burden, Surviving U.S. Active Mutual Funds*

» We confirm our results using a year-by-year test over the past 25-years. However, Fund Size loses its statistical significance.

Source: Research Affiliates using data from Morningstar Direct.

Reducing the Impact of Taxes

Universe Studied

» All surviving U.S. equity funds, 2008-2017.

» Categorized into four categories:

- Active: As categorized by Morningstar.
- Passive: As categorized by Morningstar.
- Factor: Funds with factor keywords like “value,” “growth,” “small,” “large,” “momentum,” and “quality” in the name.
- Smart Beta: Funds with keywords like “equal weight,” “low vol,” “fundamental index,” and “multi-factor” in the name.

Excess Returns by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
All Funds	0.7%	-0.3%	-1.3%	-1.8%

Surviving U.S. equity funds

» The average U.S. equity fund beats the market (survivorship bias?) but lags its benchmark by 1.8% after fees and taxes.

Source: Research Affiliates using data from Morningstar Direct.

Excess Returns by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
All Funds	0.7%	-0.3%	-1.3%	-1.8%
Active	0.7%	-0.4%	-1.5%	-1.9%
Passive	0.6%	0.2%	-0.5%	-1.3%

Surviving U.S. equity funds

» Active managers do as well as passive before expenses and taxes. Expenses cause a drag, and taxes double that drag, relative to passive.

Source: Research Affiliates using data from Morningstar Direct.

Excess Returns by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
All Funds	0.7%	-0.3%	-1.3%	-1.8%
Active	0.7%	-0.4%	-1.5%	-1.9%
Passive	0.6%	0.2%	-0.5%	-1.3%
Factor	0.4%	-0.6%	-1.4%	-2.0%
Smart Beta	1.2%	0.6%	-0.1%	-1.0%

Surviving U.S. equity funds

» "Factor" strategies, claiming expertise in a factor, fare worst. "Smart beta" funds fare best, both pretax and after tax.

Source: Research Affiliates using data from Morningstar Direct.

Excess Returns by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
All Funds	0.7%	-0.3%	-1.3%	-1.8%
Active	0.7%	-0.4%	-1.5%	-1.9%
Passive	0.6%	0.2%	-0.5%	-1.3%
Factor	0.4%	-0.6%	-1.4%	-2.0%
Smart Beta	1.2%	0.6%	-0.1%	-1.0%

Surviving U.S. equity funds

» Smart beta funds perform best, despite recent headwinds for value, a shared risk of these funds; they systematically capture excess returns in a low-cost, tax-efficient manner.

Source: Research Affiliates using data from Morningstar Direct.

Excess Returns by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
Smart Beta	1.2%	0.6%	-0.1%	-1.0%
Multi-Factor	1.3%	0.6%	0.3%	-0.8%
Equal Weight	0.7%	0.2%	0.0%	-1.1%
Low Vol/Min Var	-0.3%	-1.1%	-2.2%	-2.8%
Fundamental Index™	3.0%	2.5%	1.3%	0.5%

Surviving U.S. equity funds

» But not all smart beta funds are created equally.
Choose carefully!

Source: Research Affiliates using data from Morningstar Direct.

FF4 Alphas by Fund Type, 2008-2017

Fund Type	Gross-of-Fees	Net-of-Fees	After-Tax (Pre-Liq)	After-Tax (Post-Liq)
All Funds	0.0%	-0.9%	-1.9%	-2.4%
Active	-0.1%	-1.1%	-2.1%	-2.5%
Passive	0.2%	-0.2%	-0.8%	-1.7%
Factor	-0.4%	-1.3%	-2.0%	-2.7%
Smart Beta	0.5%	-0.1%	-0.5%	-1.4%

Surviving U.S. equity funds

» On average, Smart beta funds deliver alphas of 1.1% and 0.3% over active and passive funds, respectively.

Source: Research Affiliates using data from Morningstar Direct.

Note: FF4 is Fama French 4-factor alpha (Mkt, Size, Value, and Momentum)

ETFs & Beyond

Mutual Fund vs. ETF Structure

	Mutual Fund	ETF
Regulated '40 Act Investment Company	✓	✓
Typically Low Fee	Wide Range	✓
Subject to Capital Gain and Dividend Taxes	✓	✓
Reduces Capital Gains through Liquidation Units	✗	✓
Can Use Loss Harvesting and Lot Selection	✓	✓

» On average, ETFs have lower fees and are able to defer capital gains better than mutual funds.

Source: Research Affiliates

Average Capital Gain Tax Burden

Fund Type	"Tax Alpha" From Capital Gains Distributions % of Funds at Each CG "Tax Alpha" Level			Average Burden From CG Tax Alpha
	No CG Distributions Whatsoever	0-1% Burden From CG Tax Alpha	>1% Burden From CG Tax Alpha	
Mutual Fund	4.9%	54.9%	40.2%	0.9%
ETF	53.3%	46.7%	0.0%	0.0%

**US equity funds, 1993-2017*

» The introduction of ETFs offers the long-term investor a powerful tool for tax efficiency.

Source: Research Affiliates using data from Morningstar Direct.

Average Capital Gain Tax Burden

Fund Type	"Tax Alpha" From Capital Gains Distributions % of Funds at Each CG "Tax Alpha" Level			Average Burden From CG Tax Alpha
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**US equity funds, 1993-2017*

- » The introduction of ETFs offers the long-term investor a powerful tool for tax efficiency.
- » Over half of all ETFs have <u>never</u> made a CG distribution.

Source: Research Affiliates using data from Morningstar Direct.

Average Capital Gain Tax Burden

Fund Type	"Tax Alpha" From Capital Gains Distributions % of Funds at Each CG "Tax Alpha" Level			Average Burden From CG Tax Alpha
	No CG Distributions Whatsoever	0-1% Burden From CG Tax Alpha	>1% Burden From CG Tax Alpha	
Mutual Fund	4.9%	54.9%	40.2%	0.9%
ETF	53.3%	46.7%	0.0%	0.0%

**US equity funds, 1993-2017*

» The introduction of ETFs offers the long-term investor a powerful tool for tax efficiency.

» Over half of all ETFs have never made a CG distribution.

– Those that do are so small that the average tax burden rounds to zero!

Source: Research Affiliates using data from Morningstar Direct.

Average Cap Gain and Dividend Tax Burden

Fund Type	"Tax Alpha" From Cap Gain & Dividend Distributions % of Funds at Each "Tax Alpha" Level			Average Burden From Overall Tax Alpha
	No Distributions Whatsoever	0-1% Burden From Overall Tax Alpha	>1% Burden From Overall Tax Alpha	
Mutual Fund	2.3%	48.9%	48.8%	1.1%
ETF	5.3%	94.4%	0.3%	0.3%

**US equity funds, 1993-2017*

» ETF's tax-efficiency remains after adding in the impact of dividends on taxes.

Source: Research Affiliates using data from Morningstar Direct.

Average Cap Gain and Dividend Tax Burden

Fund Type	"Tax Alpha" From Cap Gain & Dividend Distributions % of Funds at Each "Tax Alpha" Level			Average Burden From Overall Tax Alpha
	No Distributions Whatsoever	0-1% Burden From Overall Tax Alpha	>1% Burden From Overall Tax Alpha	
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**US equity funds, 1993-2017*

» ETF's tax-efficiency remains after adding in the impact of dividends on taxes.

» Nearly half of mutual funds have distributions causing tax burdens in excess of 1%.

Source: Research Affiliates using data from Morningstar Direct.

Average Cap Gain and Dividend Tax Burden

Fund Type	"Tax Alpha" From Cap Gain & Dividend Distributions % of Funds at Each "Tax Alpha" Level			Average Burden From Overall Tax Alpha
	No Distributions Whatsoever	0-1% Burden From Overall Tax Alpha	>1% Burden From Overall Tax Alpha	
Mutual Fund	2.3%	48.9%	48.8%	1.1%
ETF	5.3%	94.4%	0.3%	0.3%

**US equity funds, 1993-2017*

- » ETF's tax-efficiency remains after adding in the impact of dividends on taxes.
- » Nearly half of mutual funds have distributions causing tax burdens in excess of 1%.
  - – Which leads to a 0.8% worse tax alpha for mutual funds.

Source: Research Affiliates using data from Morningstar Direct.

Summary

» Deferring taxes is like receiving a free loan from the IRS.

» Tax burden can be reduced by limiting turnover, reducing dividend yield, and investing in smaller more tax aware funds.

» Smart beta has emerged as an investment category with the potential to deliver positive alpha after fees and taxes.

– How? Low fees. Reliable alpha engine (e.g. rebalancing alpha) that passive funds won't capture.

» ETFs provide tax-efficiencies that mutual funds lack.

– Why? Higher fees, higher trading costs, performance chasing, and benchmark-hugging.

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3. You are a fiduciary under ERISA or other applicable law, with respect to each Transaction and are responsible for exercising independent judgment in evaluating such Transaction.
4. (A) You are either (i) a "bank" as defined in section 202 of the Advisers Act, or similar institution that is regulated and supervised and subject to periodic examination by a state or federal agency; (ii) an insurance carrier which is qualified under the laws of more than one state to perform the services of managing, acquiring or disposing of assets of a plan; (iii) an investment adviser registered under the Advisers Act, or if not registered as an investment adviser under the Advisers Act by reason of paragraph (1) of section 203A thereof, is registered as an investment adviser under the laws of the state (referred to in such paragraph (1)) in which it maintains its principal office and place of business; or (iv) a broker-dealer registered under the U.S. Securities Exchange Act of 1934, as amended or

   (B)(i) you are not an IRA owner or relative of an IRA owner and (ii) you hold, or have under management or control, total assets of at least $50 million.

Finally, it is not our intent to provide investment advice and accordingly, we will not receive any fees or other compensation directly from you for the provision of investment advice (as opposed to other services) in connection with any Transaction. Without an express written objection from you, we will deem that these acknowledgments and representations apply.

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