From Index Trackers to Risk Managers: The Expanding Role of Derivatives in ETFs

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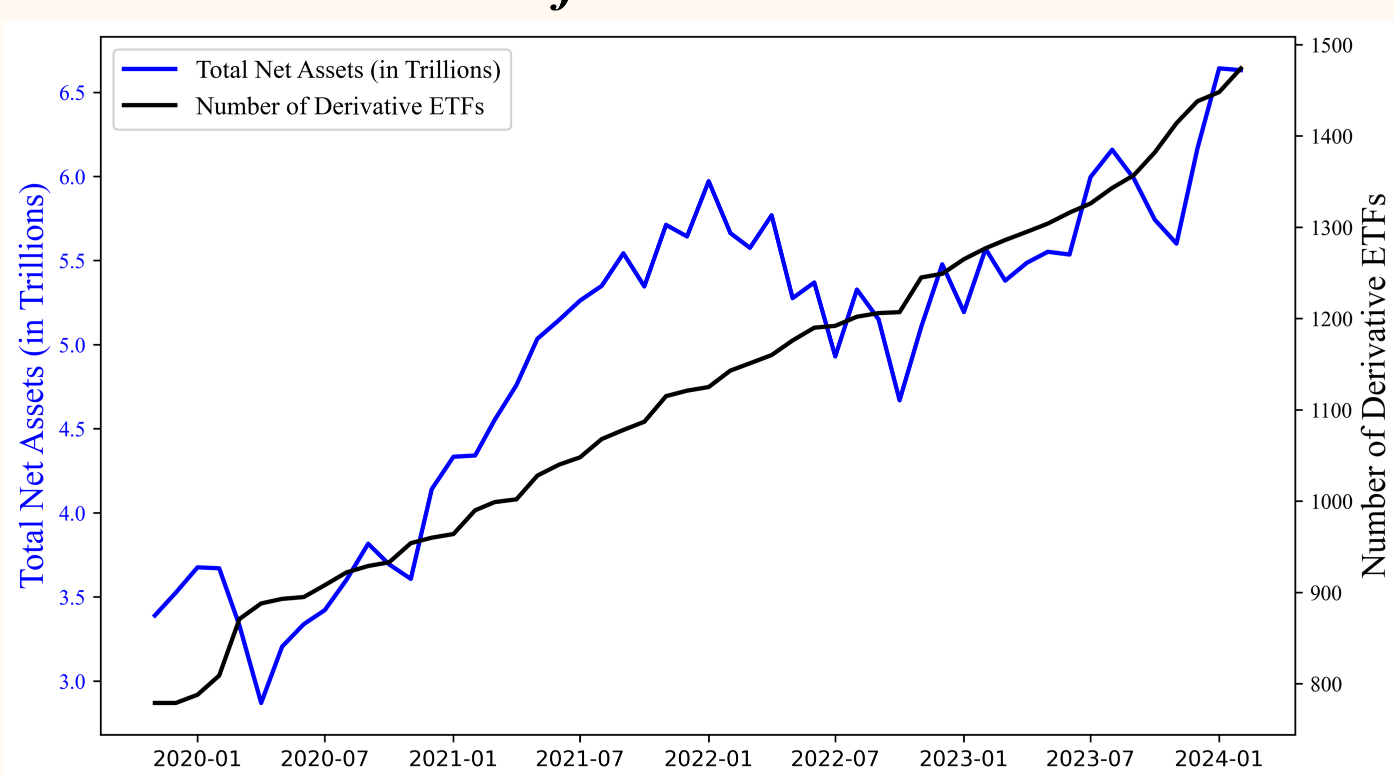
1. Expanding ETF Market - More Complex ETFs, more Active ETFs, using more Derivatives

The Growth of Derivative-based ETFs



By 2024, nearly **60%** of U.S.-domiciled equity ETFs use derivatives, managing **82%** of the total net assets in the equity ETF market.

2. New Regulations and New Dataset in 2019

Regulatory Support

- A new "**ETF Rule**" removes 'exemptive order' regulations.
- A new "**CBOE Rule**" permits the **in-kind transfer of options** in ETFs

SEC Form N-PORT filings.

- **Complete categorisation** of derivatives: No swaps in Form N-SAR.
- **New data on derivatives PnL** include notional amount of derivatives and fund-level (un)realised PnL.

3. How Do ETFs Use Derivatives?

3.1 To what extent do ETFs use derivatives?

	Number of ETFs	Absolute Weight (%) ETFs (Mutual Funds)	Gross Notional Exposure (%) ETFs (Mutual Funds)
All derivatives	1320	**21.50 (2.48)**	**95.17 (23.5)**
Future	617	1.42	6.32
Forward	160	0.07	6.65
Option	332	**18.43 (0.42)**	**75.87 (0.55)**
Swap	332	0.35	6.24

3.2 What derivatives do ETFs hold? what strategies?

Derivative Allocation

	Active	Passive
Future	13.20%	**77.10%**
Forward	0.20%	19.20%
Option	**79.70%**	0.80%
Swap	6.90%	2.90%

Derivative Strategies

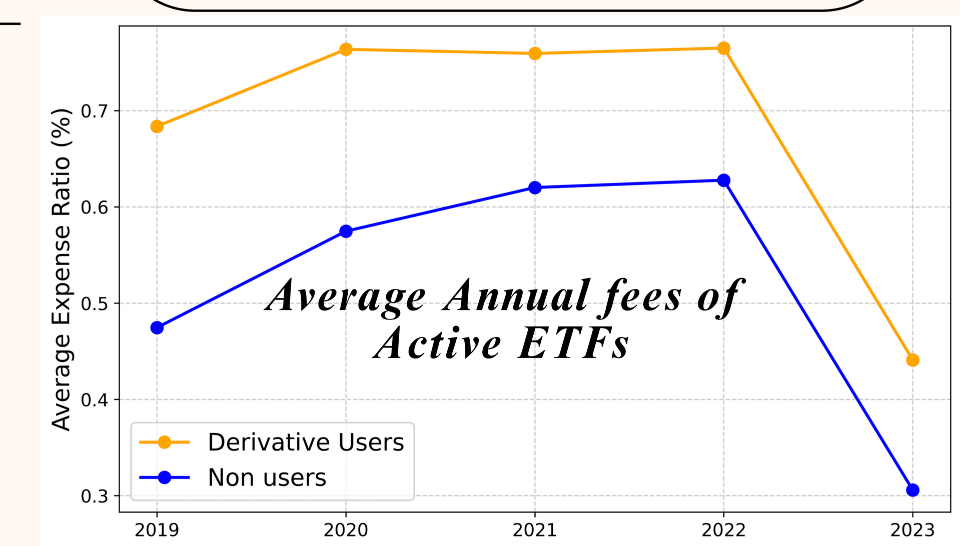
	Active	Passive
Long Futures	4.30%	**39.30%**
Buffer&Accelerated	**49.80%**	0.80%
Covered Call	6.00%	18.00%
FX Hedge	1.40%	**22.10%**
Other Complex Strategies	**38.40%**	19.70%

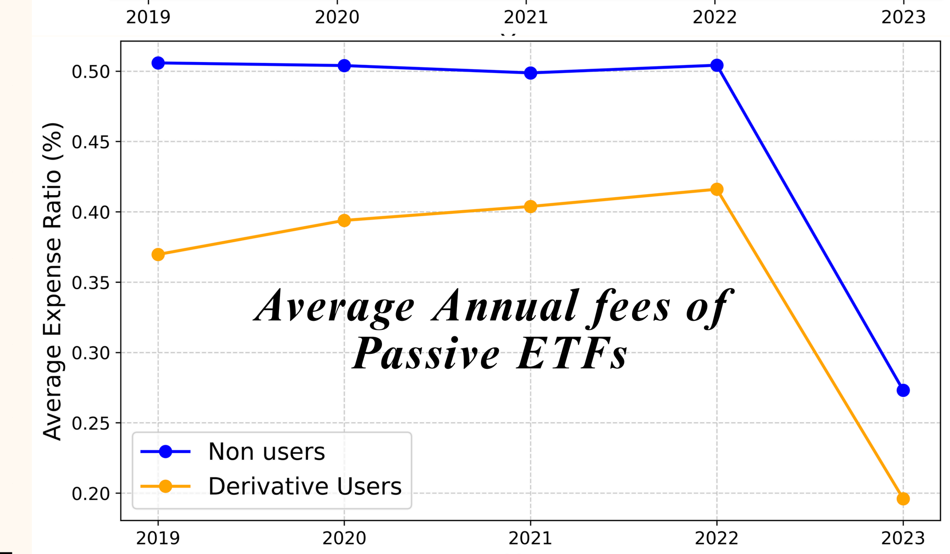
4. Derivative Use and ETF Competition

4.1 Does derivative use attract more flows and affect investor flow sensitivity?

	Active ETF Flows t+1		
	Cret	Alpha 5	Sharpe
Perf	0.085***	0.056***	0.028***
	(5.63)	(3.76)	(3.72)
Perf * Derivative	-0.01	-0.03	-0.004
	(-0.37)	(-1.11)	(-0.61)
Fee	-0.042***	-0.046***	-0.043***
	(-2.47)	(-2.69)	(-2.55)
Fee * Derivative	**0.066*** **	**0.07*** **	**0.069*** **
	(2.95)	**(3.16)**	**(3.13)**
Derivative	**0.061** **	**0.069*** **	**0.075*** **
	(2.23)	**(2.62)**	**(2.75)**
Control	Yes	Yes	Yes
Adjusted R2	0.009	0.007	0.01
No.Obs	12,448	12,448	12,328

Higher Fees. More Flows. Less Fee Sensitivity.

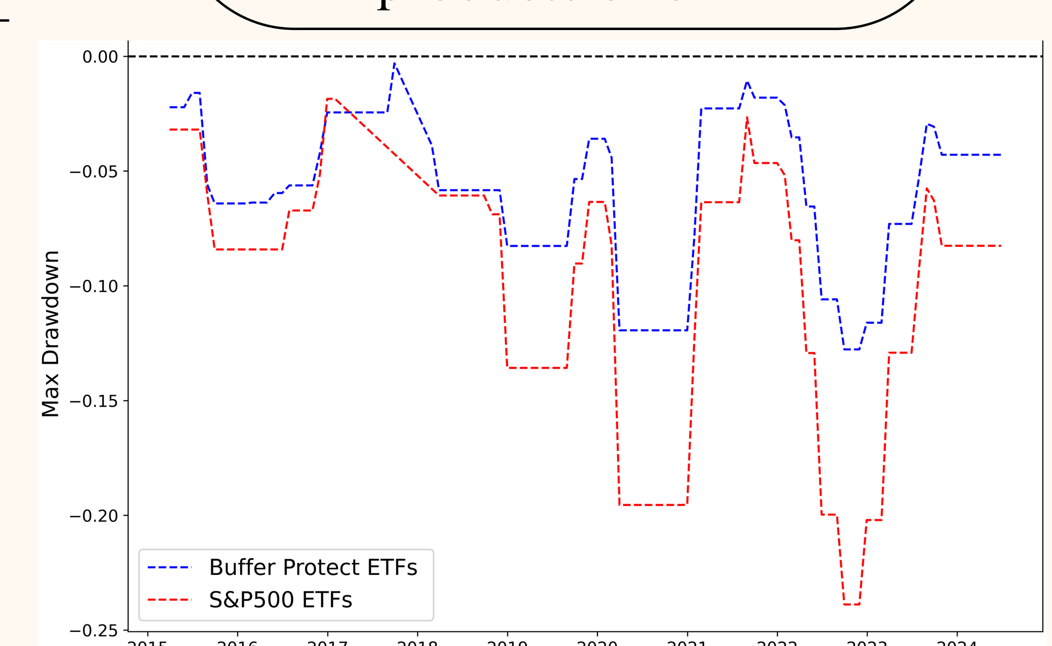




4.2 What are investors paying for active derivative-using ETFs?

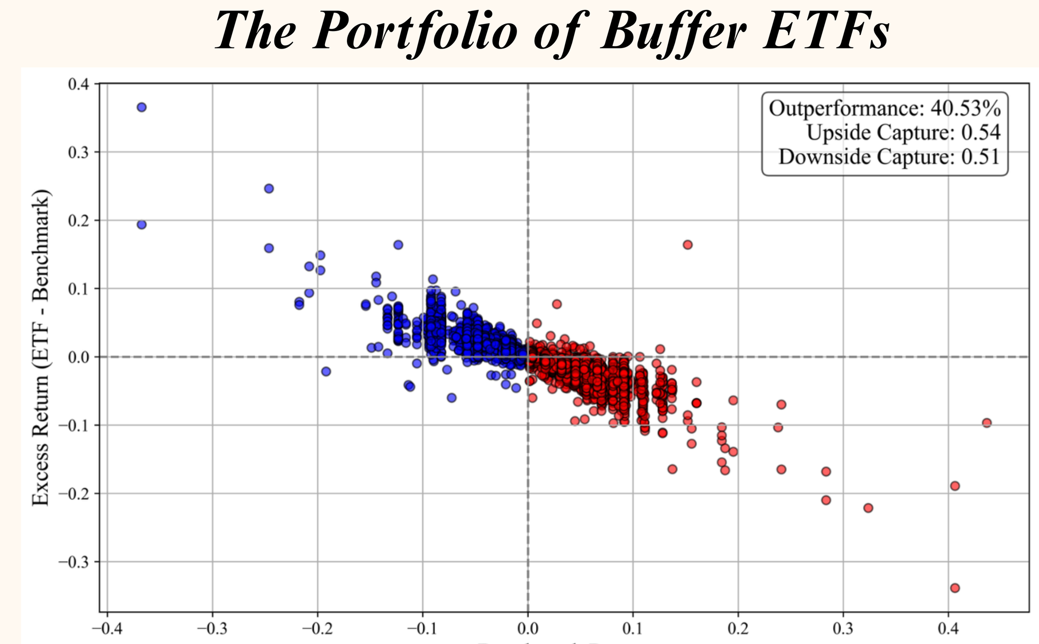
Perf. Measure	Derivative ETF Flows (1) Sharpe	(2) Cret	(3)FF5 Alpha
Mini ret	**0.066*** **	**0.082*** **	**0.089*** **
	(2.62)	**(3.83)**	**(4.09)**
Perf.	0.101***	0.070***	0.035***
	(4.50)	(5.34)	(2.78)
Derivative	0.120***	0.095***	0.085***
	(3.32)	(3.89)	(3.67)
Control	Yes	Yes	Yes
Adjusted	0.041	0.027	0.025
No.Obs	17630	11263	11376

They are paying for the **downside protection** that these derivative-based products offer

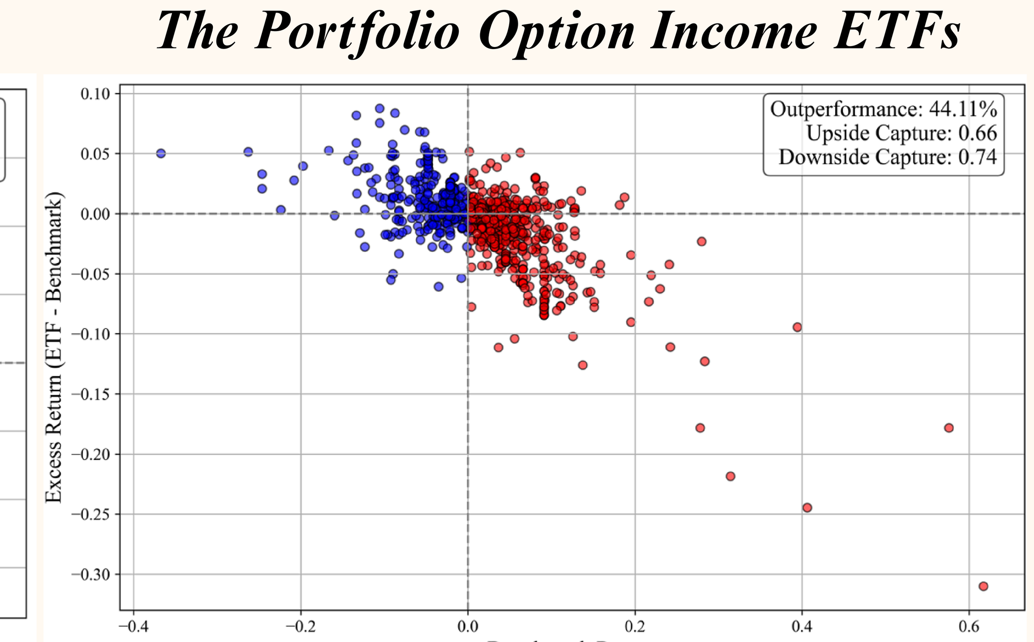


4.3 Besides higher fees, what else are investors charged?

The Portfolio of Buffer ETFs



The Portfolio Option Income ETFs



Investors have to **sacrifice upside market potential** in exchange for downside protection, which is an **additional performance cost** beyond the stated expense ratio

5. Key Takeaways

First paper to systematically study derivative use by ETFs.
ETFs strategically use derivatives to:

- **Track index**: **Cost efficiency**
- **Manage risk**: **"Improved" (Reshape)** return

Downside protection costs investors more than the expense

To read the paper