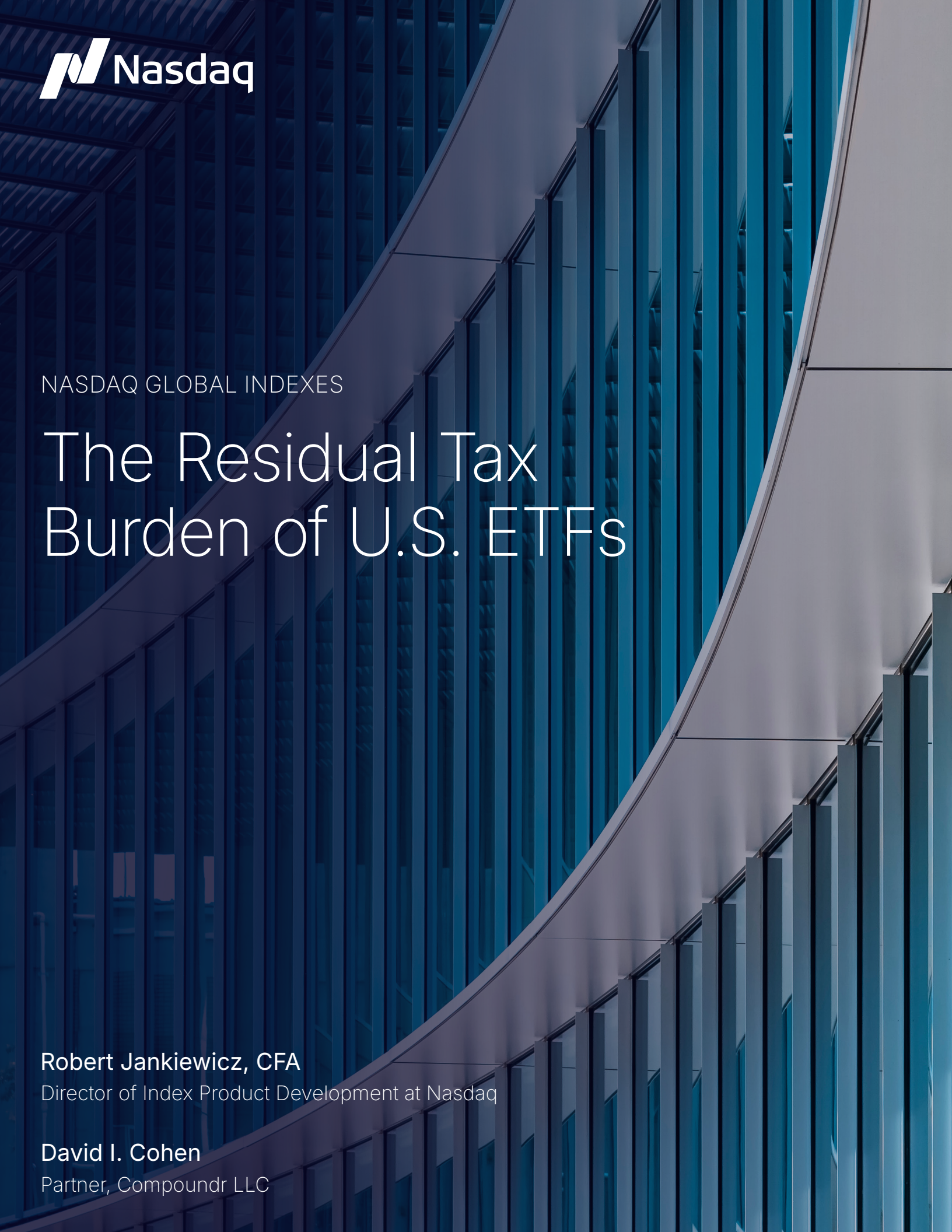

NASDAQ GLOBAL INDEXES

The Residual Tax Burden of U.S. ETFs

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EXECUTIVE SUMMARY

ETFs have gained traction over the past 20+ years and are generally accepted as being more tax-efficient than their mutual fund counterparts. However, the tax efficiency of an ETF primarily refers to its ability to allow an investor to defer paying capital gains taxes until she sells her fund at the end of her investment horizon. Despite being able to defer capital gains, ETFs usually still make dividend distributions, which are typically taxable events for the ETF investor in taxable accounts throughout her investment horizon. If an investor is income-agnostic, and chooses to reinvest dividend distributions, she must still pay income taxes on her dividend resulting in a tax drag to long-term total returns.

Financial advisors currently deploy numerous creative tax-strategies at the portfolio level; still, no one can dispute that the development of a tax-advantaged version of income-dominant assets would be a welcome addition to the U.S. ETF landscape. Is it possible for ETFs to circumvent this remaining tax burden to become *fully* tax-efficient? In today's article we explore a potential solution that could harness the custom creation & redemption mechanism already present in ETFs to compound the tax-efficiency of the investor's experience.

ETFS HAVE BECOME THE PREFERRED INVESTMENT VEHICLE OVER MUTUAL FUNDS

Over the last 20+ years, the count of U.S. Exchange Traded Funds ("ETFs") has increased from under 100 to over 4,000, representing over $10tr as of year-end 2023.[1]

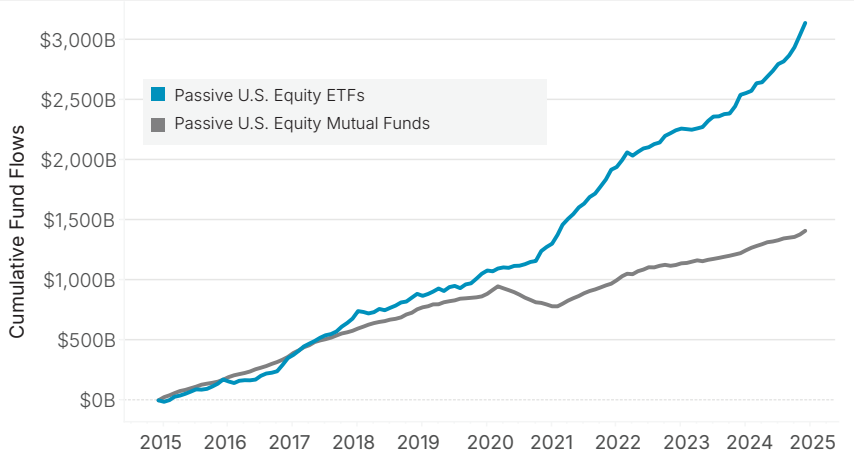
In general, the ETF has grown in popularity over index mutual funds due to the ability to easily trade various markets and asset classes in a liquid, transparent, and tax-efficient manner.[2]

For example, data show that passively managed domestic equity ETFs have attracted more net inflows than index domestic mutual funds since 2014 **(Chart 1)**.

CHART 1:

Cumulative Fund Flows: U.S. Mutual Funds vs. ETFs

Note: Chart shows cumulative monthly fund flows for U.S. Equity Mutual Funds vs. ETFs. Data from January 2015 through December 2024.



Source: Morningstar, Nasdaq Index Product Development

WHAT MAKES ETFS TAX-EFFICIENT?

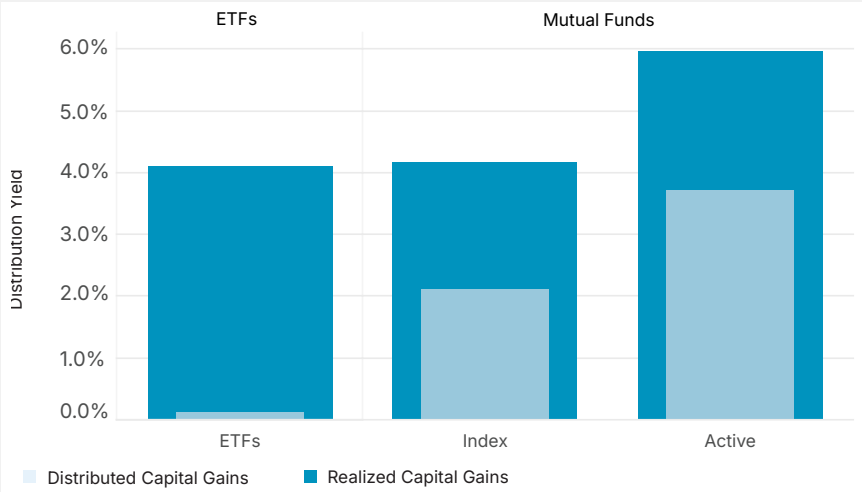
The tax efficiency of ETFs relative to mutual funds has been historically proven. The in-kind creation and redemption mechanism that relies upon exchanging securities means, in most cases, that ETF investors do not incur capital gains taxes until the end of their investment horizon, when they choose to liquidate their shares.

There has been plenty of prior research documenting the tax efficiency of ETFs over mutual funds. For example, in a recent paper, Moussawi et al. (2024) detail that despite realizing capital gains, ETFs distribute close to no capital gains compared to over 200bps in capital gains distribution yields per year for index mutual funds **(Chart 2)**.

CHART 2:

Capital Gain Distributions

Capital gains yields are scaled by fund assets. The sample is based on U.S. equity funds (1993 to 2023) using data from CRSP, N-SAR, and N-PORT filings.



Source: Moussawi, Shen, Velthuis (2024)

1. Morningstar, ETF Flows Punctuate Record Year in December (2025). Available: https://www.morningstar.com/funds/etf-flows-punctuate-record-year-december
2. Investment Company Institute (ICI), Understanding Exchange-Traded Funds: How ETFs Work (September 2014). Available: https://www.ici.org/system/files/attachments/per20-05.pdf

Despite the ETF wrapper's success in deferring capital gains, there remains a residual tax burden tied to income that is distributed to investors who hold ETFs in a taxable brokerage account that prevents them from maximizing the benefit of compounding over time.

TAXES ARE STILL DUE ON INCOME RECEIVED

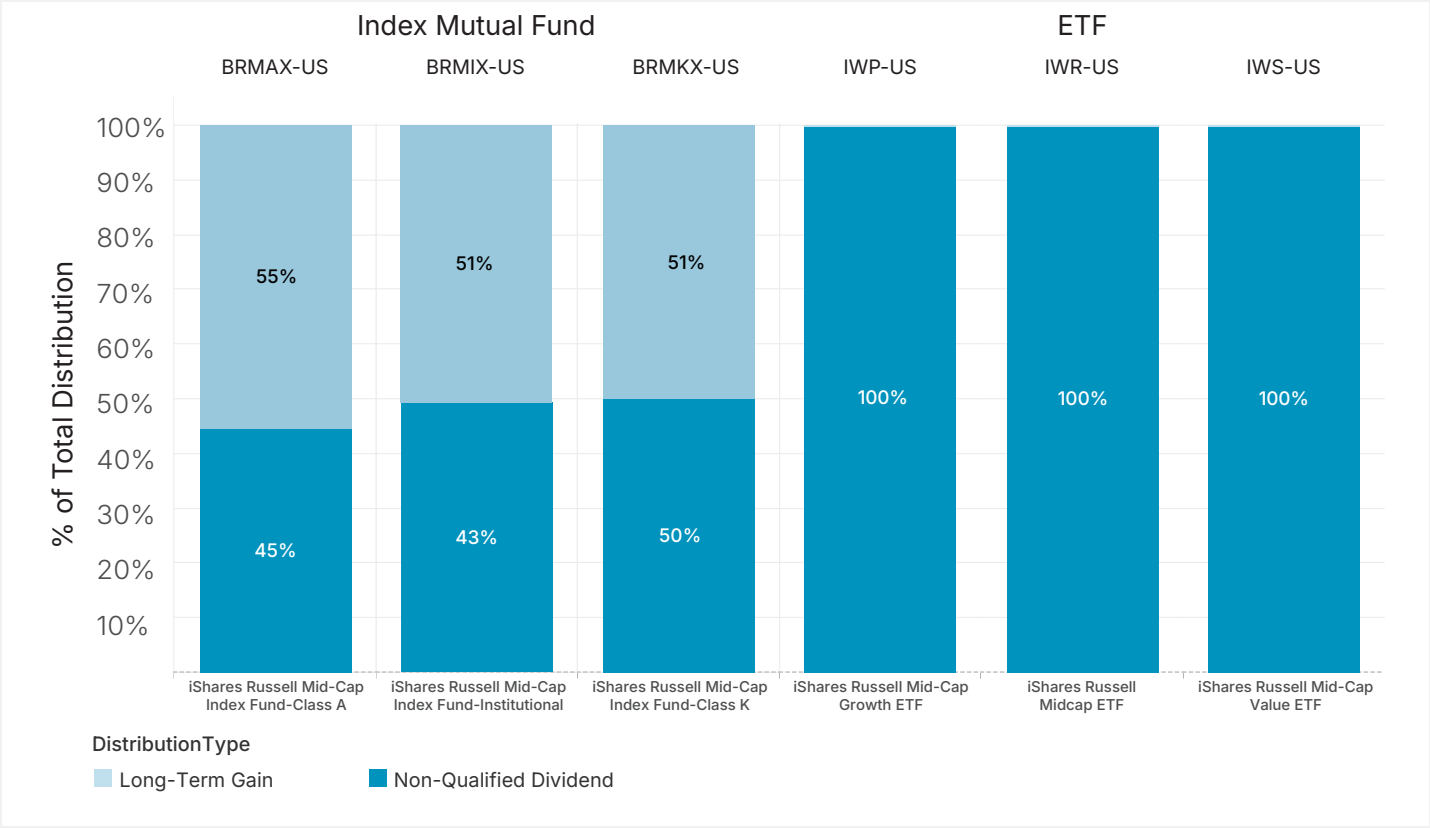
According to the Internal Revenue Code, to be considered a Regulated Investment Company (RIC), ETFs must distribute at least 90% of its investment company taxable income each year.[3]

Income earned from the underlying holdings of the ETF tends to be the largest driver of ETF distributions.[4] For example, **Chart 3** compares the distributions of three ETFs tracking Russell Mid-Cap strategies with three share classes of a similar index-tracking mutual fund. Note that in 2023 the total distribution of the mutual fund was split between long-term capital gains and non-qualified dividends, whereas the ETFs only distributed non-qualified dividends **(Chart 3)**.

Chart 3:

BlackRock Russell Mid-Cap 2023 Distributions

Note: based on total fund distributions through 2023. Chart shows the breakdown of distributions across Long-Term Capital Gains, Short-Term Capital Gains, Qualified Dividends, and Non-Qualified Dividends.



Source: FactSet, Nasdaq Index Product Development

When an investor receives this dividend, she can either keep the income or choose to reinvest it back into the ETF. However, no matter the investor's choice (keep the dividend, or reinvest), she must report the dividends on her tax return and pay taxes at her ordinary income tax rate.[5] In other words, unlike capital gains, which can be deferred through ETFs even in a taxable brokerage account, there is currently no way for a U.S. investor to defer taxes in dividend distributions.

3. See 'Distribution Requirements' under General Requirements to Qualify as a RIC: https://www.irs.gov/pub/irs-pdf/i1120ric.pdf
4. iShares, Understanding iShares ETF Dividend Distributions (2024). Available: https://www.ishares.com/us/literature/brochure/understanding-ishares-etf-dividend-distributions-en-us.pdf
5. Dividends that meet certain requirements by the IRS are considered "qualified" dividends and are taxed at lower capital gain rates. Otherwise, the dividends are considered "ordinary" and are taxable as ordinary income.

REINVESTING IS IMPORTANT, BUT NOT TAX-FREE

Assuming an investor is focused on achieving long-term total return, they may elect to reinvest their distributed dividends.

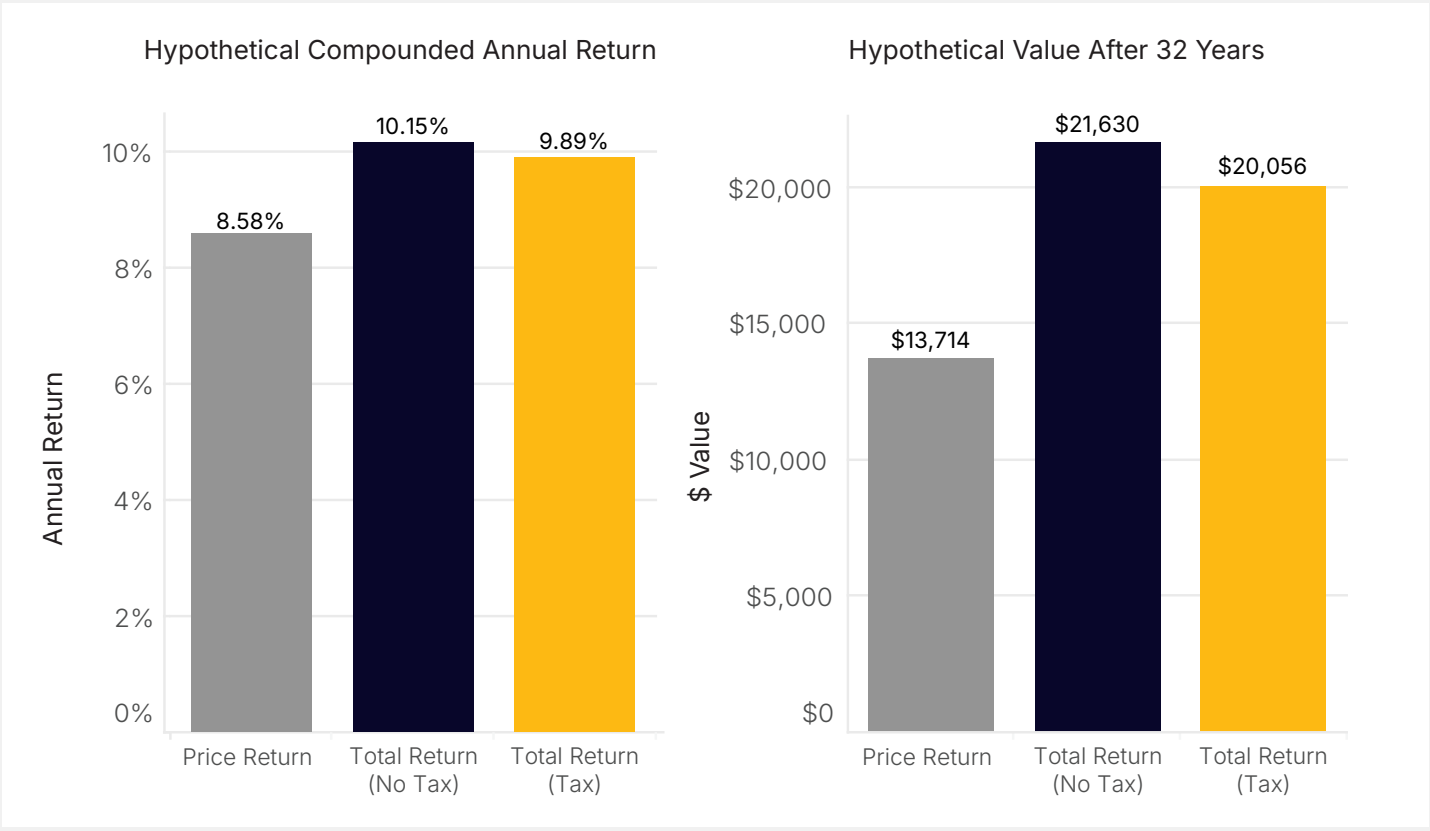
Reinvesting dividends is an important component of achieving long-term financial goals. For example, had an investor invested $1,000 into SPY in January 1993, the value of their investment would be worth nearly $14,000 today due to price return (i.e. market appreciation) alone. However, if the investor chose to reinvest their dividends, the theoretical value would be over $21,000.

However, in a taxable brokerage account, an investor must still pay annual income taxes on the dividend received even if they choose to reinvest the dividend. Thus, dividends are reinvested on a post-tax basis. This can cause a potential tax 'drag' on long-term performance **(Chart 4)**.

CHART 4:

Estimated Impact of Taxes on Reinvested Dividends

Note: Based on daily returns of SPY from 2/1/1993 through 11/29/2024. Total Return (Dividends Taxed) is an estimated total return with dividends reinvested with a 20% tax. Drag reflects the simple difference in Total Return (No Taxes) vs. Total Return (Dividends Taxed).



Source: FactSet, Nasdaq Index Product Development

In **Chart 4** above, we estimate the impact of paying a 20% tax each time SPY paid a dividend. From 1993 through 2024, our estimates suggest that the annual tax drag on SPY dividend distributions was around 26 basis points per year. Although this may not seem significant, drag compounds through time. Building on the example from before, assuming the same investor paid a 20% tax on reinvested dividends on their $1,000 investment, their long-term unrealized total return would be just over $20,000 – a 7% cumulative drag relative to the un-taxed total return.

TAX BURDEN VARIES ACROSS ASSETS

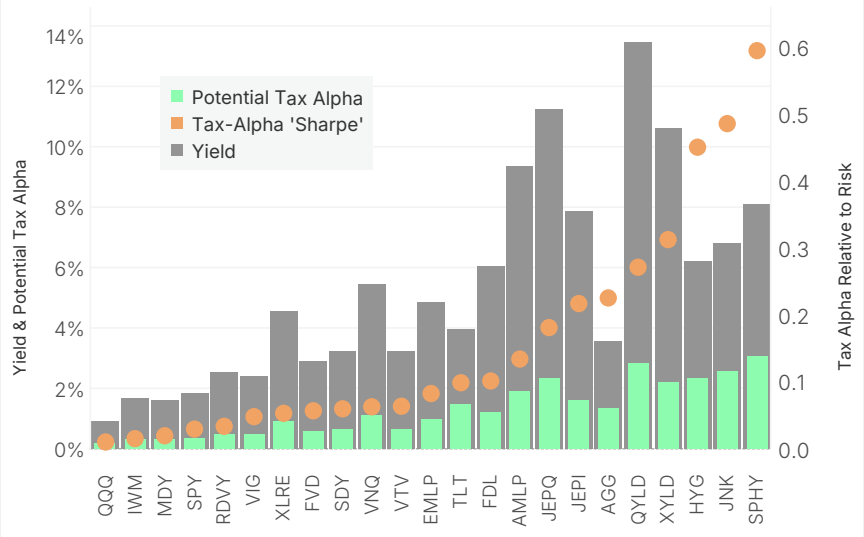
It is worth noting that the estimated drag discussed above varies across asset classes. Some assets naturally 'yield' more than others. For example, one could expect a fixed income ETF to distribute more than a generic U.S. Equity Large Cap fund. Additionally, the specific tax rate on higher yielding instruments may be higher depending on the type of distribution.

In **Chart 5** below, we estimate that higher yielding ETFs contain higher potential tax-alpha on both an absolute and risk-adjusted basis.[6]

CHART 5:

Yield vs. Potential Tax Alpha

Note: Based on daily returns of respective ETFs from 11/1/2023 through 10/31/2024. Yield estimated as the difference between annualized total return and annualized price return. Potential alpha measured as the annualized difference in post-tax total return and pre-tax total return. Tax Alpha 'Sharpe' ratio measured as the ratio of estimated potential tax alpha to annualized volatility of price returns. Distributions taxed at 20% for Equity ETFs & 37% for Fixed Income ETFs.



Source: FactSet, Nasdaq Index Product Development

Similar to the SPY example discussed previously, each time an investor of any of the funds above receives a dividend distribution, even if they choose to reinvest, they must pay taxes on the distribution. This suggests that funds with higher yields are susceptible to higher tax drag. For example, we estimate that funds such as JEPQ, JNK, or QYLD might incur around 2% annualized tax drag compared to SPY's approximate 30bps of drag. Additionally, when adjusting the potential tax alpha for the risk of the underlying asset, we see that high-yield funds such as HYG, JNK, and SPYH exhibit relatively higher levels of potential tax alpha per unit of risk. Overall, the tax drag alone may be sufficient reason for investors to avoid including these types of diversifying assets from taxable portfolios.

EARN TOTAL RETURN (WITHOUT DIVIDENDS)

The question we wish to explore is if there is a way to achieve the benefits of total return without incurring the costs of tax drag when saving to meet one's long-term financial goals. In the same way that ETFs have been successful for their ability to defer capital gains taxes, is it possible for ETFs to expand the boundaries of their tax efficiency?

Proliferation of ETFs could be part of the solution

As noted before, the growth of ETFs has led to a landscape which contains funds for a plethora of investment strategies. In some cases, there are even 'duplicate' funds – funds that track the same benchmark, or follow the same investment strategy, but are managed by different ETF Issuers.

Funds like SPY, IVV, VOO, and SPLG are nearly identical from a risk and return perspective **(Table 1)**. Over the past 10 years each fund has earned around 13.6% return per year, while taking on around 18% annualized volatility.

6. We define 'potential tax alpha' as the difference in theoretical annual total return (without taxes) and the estimated annual total return (with taxes applied to reinvested dividends). For the purposes of the analysis, a 20% (37%) tax rate was applied to reinvested distributions for equity (fixed income) ETFs.

Table 1: Quarterly Distributions Across S&P 500-Tracking ETFs

Fund	Fund Name	Issuer	Benchmark	Return	Risk
SPY	SPDR S&P 500 ETF Trust	State Street	S&P 500	13.6%	17.6%
IVV	iShares Core S&P 500 ETF	BlackRock, Inc.		13.6%	17.8%
VOO	Vanguard S&P 500 ETF	Vanguard		13.6%	17.7%
SPLG	SPDR Portfolio S&P 500 ETF	State Street		13.7%	17.7%

Note: Based on select funds. Return & Risk measured as compound annual return and annualized standard deviation of daily total returns. Data from 11/1/2014 through 11/29/2024.

Source: FactSet, Nasdaq Index Product Development

This is unsurprising given each fund tracks the same underlying index (S&P 500). The key difference between each of these funds (aside from the fund manager and potential fees) is the distribution date. Although each fund makes a quarterly distribution (again, a taxable event), the distribution dates (i.e. the ex-dates) are on slightly different days **(Table 2)**.

Table 2: 2023 Distribution Dates Across S&P 500-Tracking ETFs

Quarter	Ex-Date	SPY	IVV	VOO	SPLG
Q1	3/17/2023	**0.38%**	0.00%	0.00%	0.00%
	3/20/2023	0.00%	0.00%	0.00%	**0.40%**
	3/23/2023	0.00%	**0.42%**	0.00%	0.00%
	3/24/2023	0.00%	0.00%	**0.41%**	0.00%
Q2	6/7/2023	0.00%	**0.31%**	0.00%	0.00%
	6/16/2023	**0.37%**	0.00%	0.00%	0.00%
	6/20/2023	0.00%	0.00%	0.00%	**0.39%**
	6/29/2023	0.00%	0.00%	**0.39%**	0.00%
Q3	9/15/2023	**0.35%**	0.00%	0.00%	0.00%
	9/18/2023	0.00%	0.00%	0.00%	**0.38%**
	9/26/2023	0.00%	**0.46%**	0.00%	0.00%
	9/28/2023	0.00%	0.00%	**0.38%**	0.00%
Q4	12/15/2023	**0.40%**	0.00%	0.00%	0.00%
	12/18/2023	0.00%	0.00%	0.00%	**0.40%**
	12/20/2023	0.00%	**0.40%**	**0.41%**	0.00%

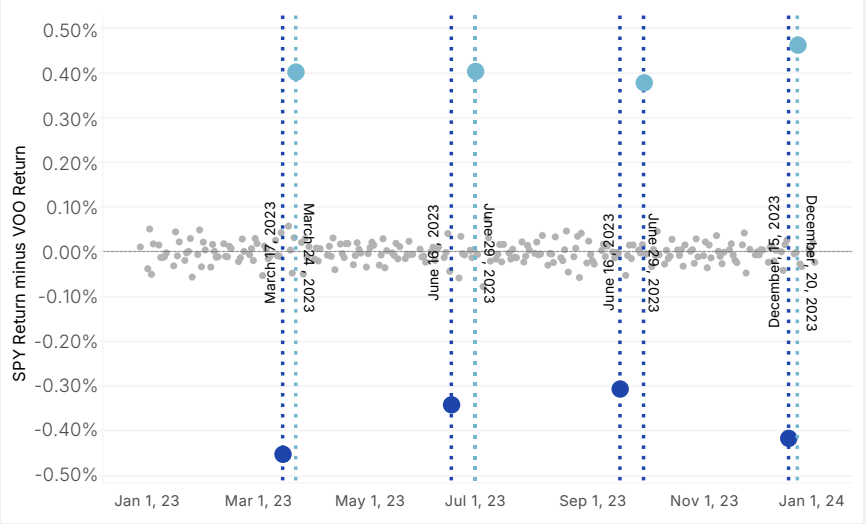
Note: Based on select funds. Yield based on the difference between Total Return and Price Return on each ex-date. Daily data from 2023.
Source: FactSet, Nasdaq Index Product Development

We can also visualize the distribution by plotting the daily return differences between each pair of funds. For example, **Chart 6** plots the daily return difference between SPY and VOO. Note that on most days, the price return difference is nearly 0 (gray dots). However, we see that the price return difference is more obvious when either fund is going *ex-dividend* (blue dots). When SPY pays a dividend, SPY's daily return trails that of VOO (dark blue), whereas when VOO pays a dividend, SPY's daily return leads that of VOO (light blue).

Chart 6:

Daily Tracking Difference: SPY vs. VOO

Note: Based on daily price returns of SPY & VOO from12/31/2022 through 1 2/31/2023. Chart reflects the difference in daily price returns between SPY & VOO.



Source: FactSet, Nasdaq Index Product Development

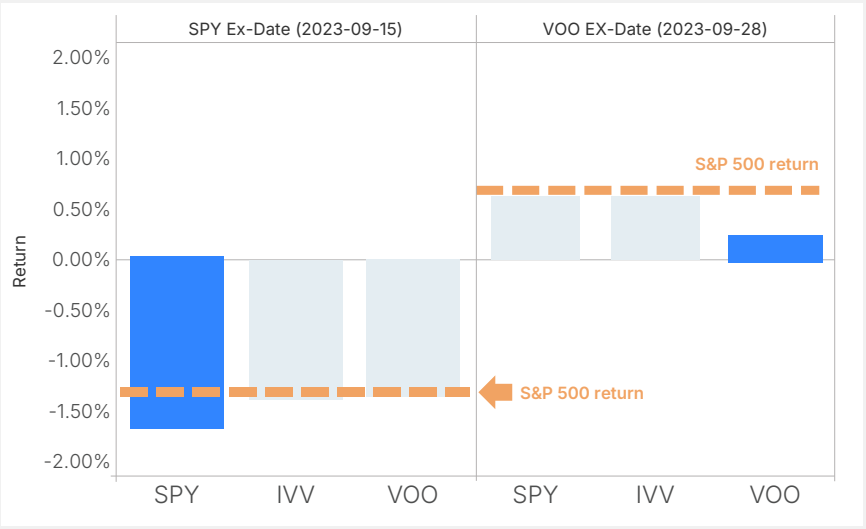
A Strategy for Deferring Dividend Distributions

On the ex-dividend date, the dividend-paying security's Net Asset Value (NAV) is reduced precisely by the amount of the distribution, and the market price should adjust accordingly (similar to the drop visualized in **Chart 6** previously). Otherwise, the security is expected to trade in line with any other similar ETF with a different ticker that did not just go ex-dividend (note the difference in SPY, IVV, and VOO on different ex-dates in **Chart 7**).

Chart 7:

SPY, IVV, VOO Returns on Ex-Dates

Note: Based on daily price returns of SPY, IVV, VOO around September Ex-Dates.



Source: FactSet, Nasdaq Index Product Development

To avoid the distribution, one would need to dispose of the dividend-paying security prior to the ex-dividend date. However, an individual would be unable to accomplish this on their own in a personal taxable brokerage account without incurring capital gains taxes and potentially violating wash-sale rules, as such a switch can only be executed through a trade transaction. Using the existing creation/redemption mechanism of the ETF structure, a fund might be able to temporarily rotate into an identical, non-dividend paying, security to maintain a similar risk and return exposure, while avoiding the distribution.

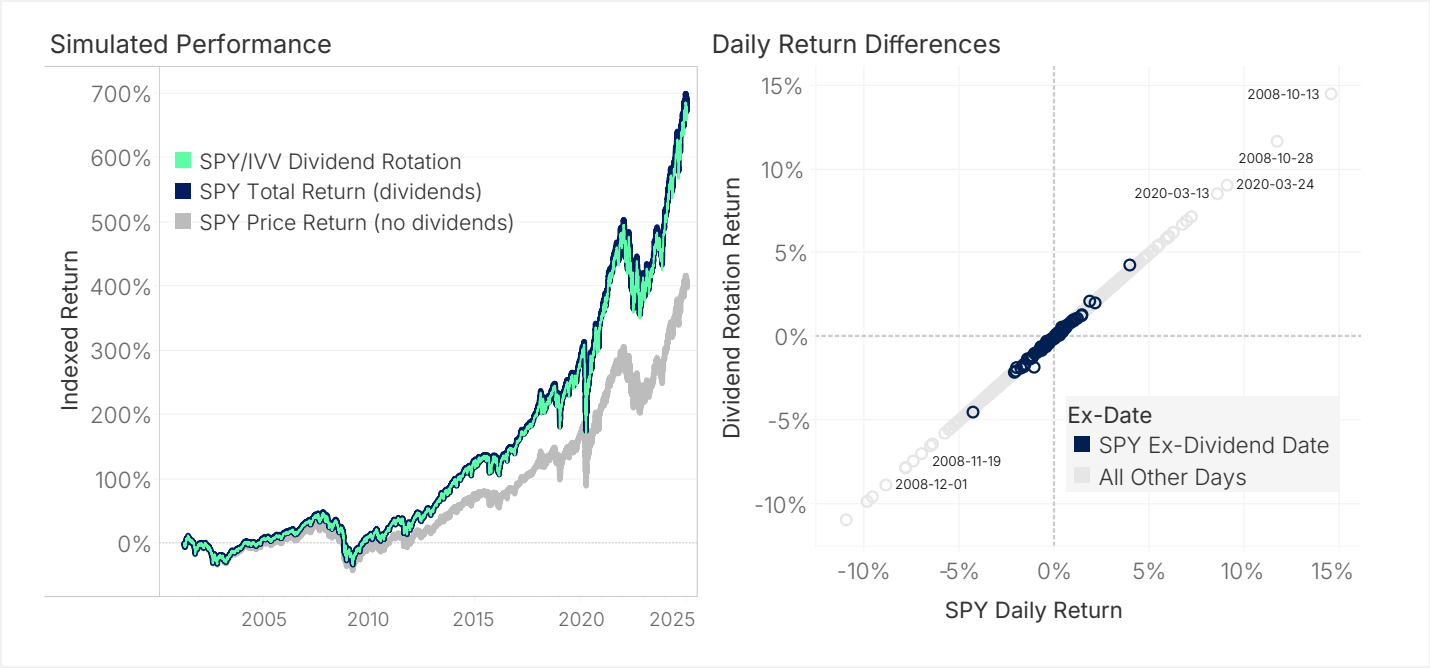
Assume there was an ETF (referred to as *The Fund*) that indirectly tracked the S&P 500 by holding SPY (i.e. the ETF in this example would be a 'fund-of-funds-of-one'). On SPY ex-dividend dates, the holder of SPY would be entitled to the dividend distribution of SPY. Thus, the price of SPY should decrease relative to VOO or IVV (holding all else constant). If the Fund were to avoid this downward

adjustment and rotate into a similar fund (such as VOO or IVV) to avoid the ex-dividend date, the Fund could potentially earn a price return that is similar to total return. No dividend would be received by the Fund, and therefore no income would need to be paid to the end investor.

Chart 8:

SPY Buy & Hold vs. SPY/IVV Rotation

Note: Based on backtested returns from March 2001 through December 2024. Dividend Rotation strategy rotates between SPY & IVV on SPY ex-dividend dates.



Source: FactSet, Nasdaq Index Product Development

Chart 8 demonstrates that the price return of the rotation strategy would mirror the total return of the targeted benchmark. In fact, over the sample period the rotational strategy achieves very similar returns and risk as the total return benchmark, without dividends **(Table 3)**.

Table 3: SPY Ex-Dividend Rotation Summary Stats

Measure	SPY (Price Return)	SPY (Total Return)	SPY Rotation (Price Return)
Return	7.53%	9.00%	8.91%
Risk	19.17%	19.13%	19.14%
Dividend Yield		1.47%	***0.00%***
Tracking Error			0.23%
Correlation			99.99%
Beta			100.04%

Note: Based on daily return data from March 2001 through December 2024

It is possible that over the long-term a strategy that implements the dividend rotation might exhibit some potential tracking error to the theoretical total return of the targeted asset. This is due to the temporary allocation to the 'substitute' fund which may exhibit similar, but not identical, performance to the target asset on ex-dividend dates (note the yellow dots on the right pane of **Chart 8**). Thus, when considering a strategy like this, in addition to the 'substitute' asset not paying a dividend on the same date, it is paramount that the substitute exhibits similar risk and return characteristics (i.e. low tracking error) to the core asset.

Overall, this suggests that an investor of the rotational strategy would not receive dividend payments, yet would still achieve a risk and return profile that is similar to one that requires reinvesting dividends to capture total return. Since no dividends are earned in the strategy, an investor does not recognize income.

However, the fee to execute such a strategy should be a key consideration. In order for an investor to truly be "better off" the strategy must not charge a fee more than the potential tax alpha. For example, in the case of the S&P 500 strategy, an annual fee in excess of around 20 basis points would erode most of the tax savings achieved by the rotational strategy. In practice, other, higher-yielding assets may be more suitable for this type of strategy, as there is likely to be residual savings after fees.

Application to other assets

The elegant feature of this approach is that it could be applied to any ETF security. As we saw earlier, some asset classes exhibit higher tax drag. Thus, implementing this strategy to higher income-paying funds could have a greater impact on the end investor.

The key requirements of this type of strategy would be:

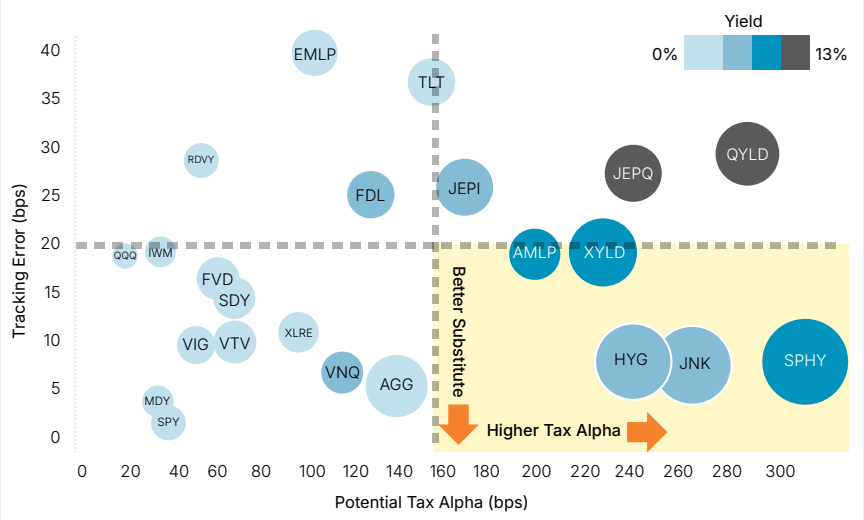
- Substitute must not be going ex-div on the same date as the core allocation
- Substitute must exhibit a similar risk and return profile as the core allocation

When looking at other core holdings, we see a trade-off emerge between the potential tax alpha and replicability **(Chart 9)**. Very liquid U.S. equity strategies tend to have close substitutes, but the potential tax alpha may be insufficient to implement such a strategy. On the other hand, higher income-oriented strategies, such as MLPs, Covered Calls, etc., may offer higher potential tax-alpha, but their replicability could be lower.

Chart 9:

Potential Tax Alpha vs. Tracking Error

Note: Based on a sample of U.S. listed ETFs from 11/1/2023 through 10/31/2024. Tracking error measured as the standard deviation of daily return differences. Tracking error displayed is the tracking error of the closest fund to the core holding. Potential alpha measured as the difference between total return and estimated post-tax reinvested total return. Reinvested distributions taxed at 20% (equity ETFs) & 37% (fixed income ETFs). Size of dot reflects potential tax alpha relative to price return volatility.



Source: FactSet, Nasdaq Index Product Development

Based on the opportunity set above, we see that high-yield bond funds generally offer higher potential tax alpha (on an absolute and risk-adjusted basis) along with reasonable substitutes.

How is this different than other products?

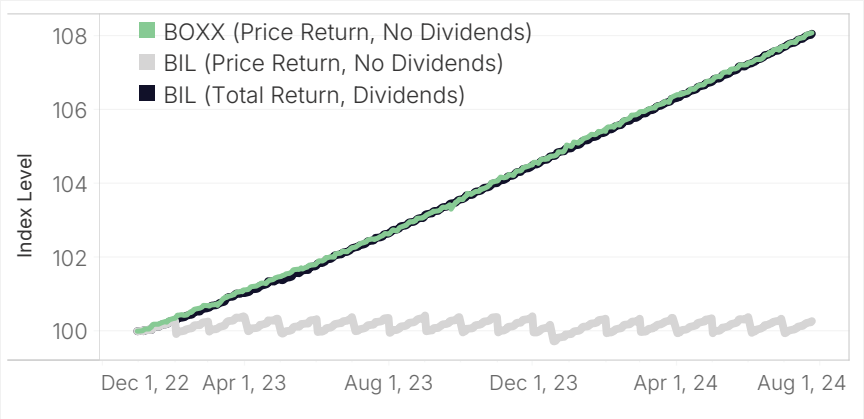
As the U.S. ETF market has evolved, there have been new products that attempt to offer investors an improved tax experience in the ETF wrapper.

Perhaps the most recent is BOXX (Alpha Architect's 1-3 Month Box ETF), which seeks to earn similar (total) returns to 1-3 month Treasury Bills **(Chart 10)**.

Chart 10:

T-Bill Return vs. BOXX

Note: Based on daily returns from 12/30/2022 through 7/24/2024. 1-3 Month T-Bils approximated by SPDR Bloomberg 1-3 Month T-Bil ETF.



Source: FactSet, Nasdaq Index Product Development

The BOXX strategy uses a multi-leg options strategy to isolate the risk-free rate (T-Bills).[7] Despite BOXX's success, the strategy is constrained to the return profile of T-bills.

Another recent launch is the Cambria Tax-Aware ETF, which seeks to invest in low-to-no dividend paying securities with strong value metrics.[8] Although the strategy attempts reduce the tax burden associated with dividend distributions, the return profile of the strategy may tilt towards large-cap value stocks.

The key benefit of the dividend rotation strategy proposed earlier is that it could be applied to any ETF security that has substitute funds with no ex-date overlap. This flexibility allows investors to maintain their desired investment exposure through any core holdings (such as U.S. Equity and High-Yield Bonds) while mitigating tax drag, unlike strategies that are constrained to a specific return profile like T-Bills. The strategy is a straightforward approach for investors to achieve the compounded total return of any benchmark fund or security over time in taxable accounts.

CONCLUSION

Overall, ETFs have become a preferred wrapper for launching investment strategies. Despite an ETF's ability to defer capital gains, there remains a residual tax burden associated with annual dividend distributions. In the strategy proposed above, we explore how the existing mechanisms that have led to the broad success of the ETF wrapper could potentially be extended to alleviate the residual tax burden associated with dividend distributions. Ultimately, we show how this strategy could potentially achieve price returns that are equivalent to a total return strategy without reinvesting dividends. This could allow an investor to meet their long-term financial goals, without incurring a tax burden along their investment horizon.

REFERENCES

Moussawi, Rabih and Shen, Ke and Velthuis, Raisa, The Role of Taxes in the Rise of ETFs (*Current Draft:* December 2024). Available at SSRN: https://ssrn.com/abstract=3744519 or http://dx.doi.org/10.2139/ssrn.3744519

7. https://funds.alphaarchitect.com/boxetf/
8. See TAX prospectus here: https://www.cambriafunds.com/assets/docs/Cambria_TAX_Prospectus.pdf