

# Advanced Tax Optimization

**Dan diBartolomeo**  
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# Introduction

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- Our Optimizer provides many sophisticated tax management features beyond the optimal tradeoff between return, risk, transaction costs and capital gain taxes.
- Many users are not familiar with these capabilities and hence produce suboptimal outcomes.
- In this presentation we will demonstrate how to use these advanced features to address situations a broad range of analytical matters likely to arise in the management of taxable portfolios
  - Tax gain harvesting, negative tax rates, qualified versus non qualified dividends, short positions, and inclusion of derivatives.
- A final focus will be proper risk tolerance setting for active management and direct indexing.

# Objective Function for Tax Aware Portfolios

$$\bullet \quad U = \underbrace{\alpha}_{\text{Return}} - \underbrace{\left( \frac{\sigma_s^2}{RAP_s} \right)}_{\text{Factor Risk}} - \underbrace{\left( \frac{\sigma_u^2}{RAP_u} \right)}_{\text{Stock Specific Risk}} - \underbrace{((C + T) * A)}_{\text{Implementation Cost}}$$

Risk Component

- $\alpha$  = the “certainty equivalent” expected portfolio return
- $\sigma_s^2$  = portfolio variance risk due to common factors (correlation across securities)
- $\sigma_u^2$  = portfolio variance risk due to stock specific risks
- $RAP$  = risk tolerance
- $C$  = transaction costs for the optimization
- $T$  = capital gain taxes for the optimization
- $A$  = amortization constant

# Tax Effects on US Investors

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- Possibly Applicable Tax Rules, see Simpson (2020)
  - Short Term Capital Gain / Loss (offset against ordinary income)
  - Long Term Capital Gain / Loss
  - Special five-year Capital Gain/ Loss (residential, Section 1202 rules for ventures)
  - Interest and discount/premium amortization US Government Bonds
  - Interest and discount/premium amortization Municipal bonds for resident
  - Interest and discount/premium amortization Municipal bonds non-resident
  - Qualified dividends (equities of US companies held more than 44 days)
  - Non-qualified dividends
  - Other interest, dividends and amortization
  - For some entities, unrealized gains/losses
  - Section 1256 rules for derivatives (futures, options)
  - Section 998 rule for currency gain/loss as separate from local share capital gain/loss
  - Wash sale rules (there are now two popular interpretations)
  - Dozens of bi-lateral treaties on foreign withholding tax on dividends to US investors
- All these effects have been addressed by Optimizer users to refine tax optimizations

# Basics: Splitting the Amortization Constant

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- One subtlety that most users don't notice is that the Optimizer automatically splits the parameterization of the Amortization constant into proper components
- You can think of capital gain taxes as having a lower base rate that is levied on long term capital gains and the incremental increase in the tax rate when capital gains are short term.
- The Amortization constant for an optimization should be related to expectations of portfolio turnover.
  - The lower the turnover, the longer the average holding period over which “point in time costs” (tax, trading costs) need to be amortized.
- However, the amortization constant for the incremental portion of the short-term tax rate is lot specific.
  - The *incremental* tax cost must be amortized over the future period between now and when the tax status of that lot will go from short term to long term.

# An Update on the Wash Sale Rule

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Users have two choices of wash sale logic as is necessary given different legal interpretations of the wash sale rule that are now in use in the United States.

The basic difference between the “traditional” wash sale logic and the “updated” logic is easy to illustrate. Assume you have three lots of IBM with the following attributes:

IBM is currently trading at \$150 (10/13/2022)

Lot 1 was purchased on 6/1/2022 at \$190

Lot 2 was purchased on 10/1/2022 at \$135

Lot 3 was purchased today 10/13/2022 at \$150

From an objective of tax loss harvesting, you would like to sell Lot 1 to harvest the \$40 (190-150) capital loss. Under traditional logic doing so would create a “wash sale”.

However, it is possible to sell Lot 1 without creating a wash sale *after* Lot 2 and Lot 3 have already been sold (e.g. use LIFO for recent transactions). Some financial service providers have taken the legal view that **selling all three lots *simultaneously* will not be considered a wash sale** so that Optimizer now supports either view.

# \$3000 Offset Against Ordinary Income

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- Under normal circumstances, US investors can deduct up to \$3000 of short-term capital losses to offset ordinary income.
- While most tax loss harvesting involves deferring capital gain taxation to later tax years (possibly permanently if the taxpayer dies), the cross-sectional dispersion of returns provides for a possible permanent avoidance of some tax.
- Consider a two-asset portfolio which produces a zero return over the tax year.
  - Asset 1 has produced a \$3000 loss, while Asset 2 has produced a \$3000 profit.
  - If I sell Asset 1 before it becomes a long-term loss, I can deduct the short-term loss against ordinary income. The saved taxes are now available for investment
  - By holding Asset 2 until it becomes long term, the embedded gain will likely be taxed at some future date but at a much lower rate.
- The impact of this aspect of tax loss harvesting is material for many investors
  - See Luke Smith guest presentation, [Tax-Aware Optimized Back-Testing Using the Northfield Optimizer and Risk Models \(northinfo.com\)](#)

# Increasing the Value of the Tax Timing Option

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- In general, the greater the cross-sectional dispersion of returns of the securities in a portfolio, the greater the opportunity to do “tax smart” management, as the investor can exercise a broader range of “options to do something else”.
- One obvious way to do that is prefer asset classes with wide internal dispersion (e.g. small cap stocks are good, short term Treasury bonds are not).
- The other way to is to force dispersion by using strategies that involve short positions (e.g. commonly market neutral or 130/30).
- Numerous asset managers such as AQR have commented on the advantage of such processes, [Tax-Efficient Portfolio Transition, or How to Rejuvenate Ossified Equity Portfolios \(aqr.com\)](#)
- The Northfield optimizer automatically handles all the differential capital gain tax aspects of short positions (e.g. gains and losses are always considered short term).

# Deceiving **Without** a Tangled Web

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- The Northfield Optimizer allows users to keep extensive tax lot level input information about portfolios.
- One little known Optimizer function is that users can actually input *two sets of information about attributes of the tax lot* such as the acquisition cost and basis date.
  - The first set of information is the real information and is always used needed for proper recording keeping and tax reporting.
  - The second set of inputs can be **intentionally false**, so to trick the Optimizer into doing things that would otherwise be economically irrational or operationally cumbersome.
- A simple example would be case of an investor who has received some shares of stock as an inheritance and chooses to keep this specific lot of this specific security irrespective of any possible tax benefit of selling it
  - The cost basis of this lot can be “reset” to zero (or even a negative value) to make any sale prohibitively expensive from a capital gain tax perspective.

# Another Fun “Deception”: Gain Harvesting

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- Some taxable institutional investors (e.g. insurance companies) sometimes wish to harvest “net gains” in their portfolio despite the tax costs if their accounting policies include only realized capital gains into corporate earnings.
- Similarly, private investors may wish to “harvest gains” to pay taxes now and reset position cost basis if they believe that tax rates will be higher in the future.
- Rather than try to contend with a non-convex objective function as would result from negative tax rates (i.e. encourage gain harvesting), we can use an adjusted cost basis for every lot to make gains look like losses and losses look like gains.
  - Consider stock X selling at \$100.
  - We bought our lot at \$80/share resulting in an embedded capital gain of \$20.
  - We can adjust the cost basis to \$120/share making the gain look like a loss, *which can then be tax loss harvested in the usual fashion.*
- *Our Optimizer implementations meant for dealing with large numbers of accounts (e.g. MARS) have this kind of “trick function” fully automated.*

# Understanding Bond Premiums and Discounts

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- When bonds are purchased at prices above (premium) or below par (discount), the amortization of the premium or discount has important tax effects.
  - In general, amortizations of premiums on taxable bonds is deductible against ordinary income.
  - Some researchers have (controversially) argued that investors can offset their entire income tax liability by holding premium US Treasury bonds with sufficiently high levels of margin leverage. [101.pdf \(northinfo.com\)](#)
- For municipal bonds, premiums and discounts represent capital gains and losses.
  - Significant research (multiple papers and a book by Andrew Kalotay) has argued that most municipal bond issuers and investors misprice these tax effects especially on callable bonds.
  - The “adjusted” cost basis function in the Optimizer can be used to more accurately represent the opportunity to harvest losses on municipal securities
  - See [Mismanagement of Municipal Debt Puts a Hole in Everybody’s Pocket \(northinfo.com\)](#)

# Tax Sensitive “Direct Indexing” is a Misnomer

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- The conceptual argument for passive index funds being an optimal investment strategy requires that the market be “efficient”.
- While there are many arguments about whether modern financial markets are efficient in this sense, one thing is clear:
  - *The same index cannot be simultaneously efficient for both taxed and tax-exempt investors at the same time because different return components are taxed at different rates (both effective and nominal).*
  - Quasi passive strategies trying to take advantage of tax arbitrage as an alpha source go back to the late 1970s (Wells Fargo “yield tilt”)
- We recommend adjusting security level expected returns (alpha inputs) for income taxation at the qualified dividend rate.
  - Incremental tax costs associated with liquidating a position in a stock that has paid a dividend but has not yet achieved “qualified” status can be represented as an adjustment to cost basis (lower basis to make a liquidation less attractive until “qualification” of the previously received dividend is reached.
  - Also works for **negative** dividend taxes (e.g. Australian franking credits)

# The Approach to Legacy Positions

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- New clients often represent a challenge for taxable manager because they come with an existing portfolio, often with large embedded capital gains.
- A useful way to approach this problem is to formulate a new target portfolio for the investor as if they were starting from cash.
  - The manager can then create an efficient frontier analysis with tax costs on one axis and tracking variance ( $TE^2$ ) against the target portfolio on the other.
  - Depending on composition of the portfolio and the degree of embedded gains, a transition over multiple tax years is generally best.
- A key ingredient to getting this analysis right is to remember that taxes are levied on absolute gains and losses, not benchmark relative.
  - The very low tracking errors typically associated with index funds are not appropriate for taxable portfolios in transition against their own targets.
  - Setting risk tolerance appropriately was covered in [Parameterization of the Tax/Risk Tradeoff for High Net Worth Investors \(northinfo.com\)](http://northinfo.com)

# Complementarity for Super Concentration

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- Consider a real client portfolio
  - \$600 million in one NYSE stock with zero cost basis
  - The client obviously wants to reduce risk by investing in other securities while minimizing the capital gain tax.
- First Step Solution
  - Get a margin loan for \$600 million and use the cash to invest in other \$600 million in diverse equities (i.e. high idiosyncratic risk) that hedge the factor bets of the big position (e.g. airlines if the big position was an oil firm).
  - Total equity exposure is now \$1.2 billion, so short equity index futures to bring net exposure down to \$600 million. *Be careful about 60/40 tax treatment.*
- Periodically tax loss harvest the “complementarity portfolio” to create tax losses.
  - Sell pieces of the single big position to the extent the losses will offset the realized gains. Reinvest all proceeds in the side portfolio.
- *In our live example, the portfolio was down to a 20% concentration in the original position in the first 18 months with no net capital gain realized.*

# Householding

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- The Northfield Optimizer allows for joint optimization of multiple related accounts such as members of a family, or the taxable and tax deferred accounts of a single investors.
- All normal tax functions are handled jointly including wash sales.
- There are special constraints that can be invoked to ensure that all family members are treated “fairly” in that what is optimal for the whole family may be sub optimal for any specific individual.
- For more information see [Northfield News June 2019 \(northinfo.com\)](http://northinfo.com)

# After Tax Return (diBartolomeo, JPerf 2021)

- We will just change the GIPS formula by adding an adjustment for the economic dollar value of changes in unrealized gains/losses during the period.

$$r = (MVE - MV_B - CF - T_{real} - A) / (MVB + (\sum CF_i * w_i))$$

$$A = ((UGE_e - UGE_b) * LTR) * (1 - M_h) / (1 + Y_h)^H$$

$UGE_e$  = long term capital gain “equivalent” value at the end of the period

$UGE_b$  = long term capital gain “equivalent” value at the start of the period

LTR = the long term capital gain tax rate at the time the unrealized gains are realized

H = the average holding period of the portfolio

(e.g. if the portfolio has 10% a year turnover, the whole portfolio should be new in 10 years, while the average holding period is 5 years)

$M_h$  = the decimal likelihood that the investor dies before the currently unrealized capital gain is realized (i.e. from a mortality table based on the investor age and the value of H)

$Y_h$  = the decimal yield on a Treasury bond with maturity H years from now

# Conclusions

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- While “tax loss harvesting” has become a popular marketing phrase in the world of taxable investors, many of the approaches used by asset managers to manage taxable wealth are woefully sub-optimal.
- Taxable managers often do a poor job because they ignore the many opportunities to legally reduce taxation in order to simplify their marketing or their operational efforts.
- Since 1995, the Northfield Optimizer has persistently offered the most sophisticated processes for maximizing after tax returns to investors, particularly when measured properly
- Northfield implementations have automated many of the more nuanced functions in order to facilitate large scale programs involving hundreds of thousands or millions of portfolios.