



Personal Finance: Another Perspective

Investing 6: Mutual Fund Basics

Updated 2020-03-03



Objectives

- A. Understand the advantages, disadvantages, types and classes of mutual fund shares
- B. Understand how to calculate mutual fund returns
- C. Understand the costs of investing in mutual funds and how to buy a mutual fund
- D. Understand plans and strategies for mutual funds



Investment Plan Assignments

- Investments 6: Mutual Fund Basics
 - 1. Develop criteria that you can use to select a good mutual fund, index fund, or ETF for your portfolio. Remember an index fund is a mutual fund that just purchases the specific index shares
 - 2. Using that criteria and [Using Morningstar to Select Funds](#) (LT07) pick one mutual fund minimum for each of your 4 asset classes (I recommend you have at least 4 asset classes minimum for diversification purposes), i.e., Emergency Fund, Core, Diversify, etc.
 - For a spreadsheet with some ideas and a way to record Fund criteria, see [Mutual Fund Selection Worksheet](#) (LT7B)



Investment Plan Assignments (continued)

- Investments 8: Selecting Assets
 - 1. Using your criteria for good mutual funds, use Morningstar or other programs to select your mutual/index funds for each of your asset classes
 - 2. Print off the Snapshot page from Morningstar for each of your chosen Funds or assets (as well as for any mutual funds you may already own)
 - 3. Include the chosen Fund names in your Exhibit 2: [Investment Process Worksheet](#) (TT13) with your target allocations
 - 4. Assemble your completed Investment Plan including Exhibit 1 ([LT23](#)) and Exhibit 2 ([LT13](#))



A. Understand the Advantages, Disadvantages, types and Classes of Mutual Funds

- What is a Mutual Fund?
 - A way of holding financial and real investments
 - An Investment company that pools money from investors to buy stocks, bonds, and other financial investments
 - Investors own a share of the fund proportionate to the amount of their investment divided by the total value of the fund
- Why were they developed?
 - To give smaller investors access to professional management and to increase the assets of mutual fund companies



Mutual Funds (continued)

- What are the advantages of Mutual Funds?
 - Diversification
 - Owning a mutual fund which holds numerous securities can reduce risk significantly
 - Professional management
 - Mutual funds are run by professional management who make the buy/sell decisions
 - Minimal transaction costs
 - Mutual funds enjoy economies of scale in purchases and sales due to size
 - Liquidity
 - Money from open-end mutual funds can be received in 2-3 business days



Mutual Funds (continued)

- Low cost
 - “No-load” mutual funds are sold without a sales charge and are redeemed without a charge as well
- The ability to purchase and sell at Net Asset Value
 - “Open-end” mutual funds can be purchased and sold each day at the fund’s Net Asset Value
- Service
 - Mutual funds generally offer service to answer questions, help you open accounts, purchase and sell funds, and to transfer funds as well.



Mutual Funds (continued)

- In addition, they may include:
 - Automatic investment and withdrawal plans
 - Automatic reinvestment of interest, dividends, and capital gains
 - Wiring and funds express options
 - Phone switching
 - Easy establishment of retirement plans
 - Check writing
 - Bookkeeping and help with taxes



Mutual Funds (continued)

- What are the disadvantages of Mutual Fund Investing?
 - Lower-than-market performance (if actively managed)
 - From 1987-2019, most actively managed mutual funds underperformed their benchmarks (Dalbar QAIB 2018).
 - High costs
 - Unless analyzed, loads (sales charges), management and other fees (12-b1 charges) can be significant.



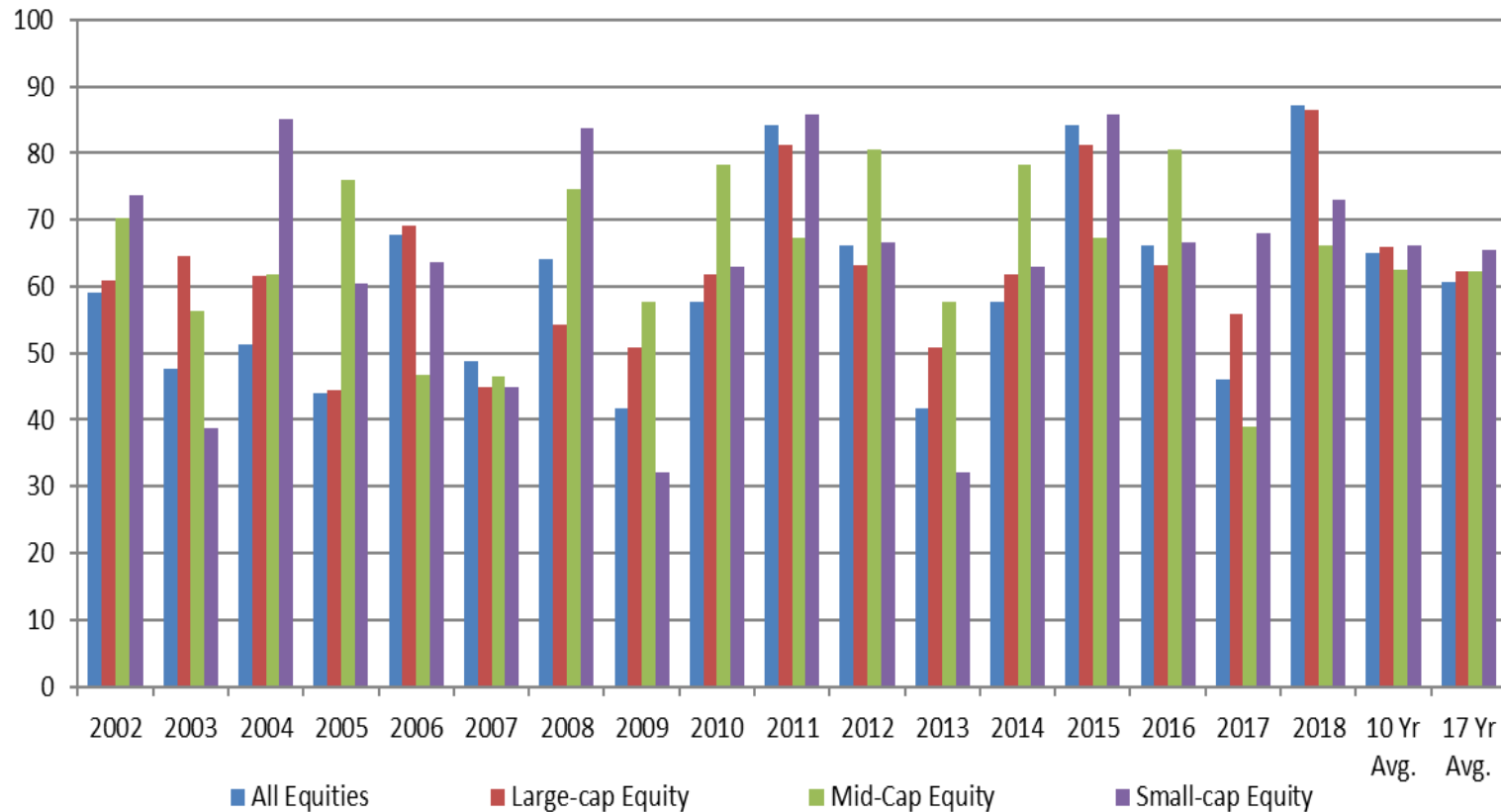
Mutual Funds (continued)

- Other Risks
 - Mutual funds are subject to both market and stock related risks, particularly in concentrated portfolios
- Inability to plan taxes
 - Mutual funds pass 95% of all income to shareholders, who must pay taxes on this each year, which may be difficult to plan for
- Premiums or Discounts
 - “Closed-end” mutual funds may trade at a premium or discount to their underlying Net Asset Value
- New investor bias
 - New investors dilute the value of the shares as this money must be invested (at roughly 0.5%).



Mutual Funds (continued)

Percentage of Actively Managed Funds Which Underperformed their Benchmarks 2002-2018



Source: S&P Indices versus Active Funds (SPIVA Scorecard, S&P Research, year-end 2002-2018).



Types of Mutual Funds

- What are the major types of Mutual funds?
 - The types of mutual funds generally follow the major asset classes
 - Money market , stock, and bond mutual funds
 - Others specialty mutual funds:
 - Index funds
 - Exchange Traded Funds (ETFs)
 - Balanced funds
 - Asset allocation funds
 - Life-cycle funds



Types of Mutual Funds (continued)

- Money market mutual funds
 - Money market mutual funds are funds which invest the majority of their assets in short-term liquid financial instruments such as commercial paper and government treasury bills
- Stock mutual funds
 - Stock mutual funds are funds which invest a majority of their assets in common stocks of listed companies (8,293 U.S. stock funds as of 8/12/16 – Morningstar)
 - These funds generally have a specific objective, i.e. “large-cap,” “small-cap”, “value,” “growth,” etc. which relates to the types of stocks the mutual fund invests in



Types of Mutual Funds (continued)

- Bond mutual funds
 - Bond mutual funds are funds which invest a majority of their assets in bonds of specific types of companies or institutions (5,565 taxable bond funds as of 8/12/16)
 - These funds generally have a specific objective, i.e. “corporate,” “government”, “municipals,” “growth,”, etc. which relates to the types of bonds the mutual fund invests in
- Index funds (1,065 as of 3/5/2019 – Morningstar)
 - Index funds are mutual funds designed to match the returns of a specific index or benchmark
 - Index funds can track different benchmarks, with their goal is to match the return of the benchmarks



Types of Mutual Funds (continued)

- Exchange traded funds (ETFs)
 - ETFs are portfolios of assets similar to mutual funds which trade on organized exchanges (2,688 as of 3/5/2019 - Morningstar)
 - ETF's trade like stocks, purchased with transaction and custody costs, and priced throughout the day
- Asset allocation/Balanced funds
 - Mutual funds which rotate asset classes among stocks, bonds, and cash for the best return
 - Asset allocation funds invest the fund's assets in the asset classes expected to perform the best over the coming period of time



Types of Mutual Funds (continued)

- Life-cycle (or target date) funds
 - Funds which change their allocation between stocks and bonds depending on investor age (2,682 as of 3/5/19)
- Hedge funds
 - Hedge funds are less-regulated mutual funds which take much more risk than normal with the expectation of much higher returns
 - Generally they can take both long positions (where they buy assets) and short positions (where they short-sell assets, i.e., borrow assets and sell them). They hope to later buy back the assets at a lower price before they must return them to the borrower



Classes of Mutual Fund Shares?

- Mutual funds are divided into classes of shares
 - These classes of shares vary depending on the loads and management fees paid
 - Loads are sales charges to compensate the sales force for selling the fund. Loads directly reduce the amount of money invested by the amount of the load
 - Generally, research has found that the performance of load funds and no-load funds is identical. When the sales charges are included, no-load funds significantly outperform load funds. (Matthew R. Morley, “Should You Carry a Load? A Comprehensive Analysis of Load and No-Load Mutual Fund Out-of-Sample Performance,” *Journal of Banking and Finance*, vol. 27, nu. 7 (2003), pp. 1245-71.)



Classes of Mutual Funds (continued)

- While there are differences in classes of shares among investment management companies which charge loads, they generally are:
 - Class A Shares: These shares commonly have a front-end or back-end load to compensate for the sales person's commissions. Because of the front-end loads, they usually have lower management fees
 - Class B Shares: These shares commonly only have a back-end load that is paid only when the shares are sold. This load traditionally declines over time. Class B shares generally have higher expense ratios when compared to Class A shares



Classes of Mutual Funds (continued)

- Class C Shares: These shares generally have a lower front- and back-end load fees, but higher management fees
- Class R Shares: These shares are generally for retirement purposes. Check the loads and management fees which may be substantial
- No-Load Shares: These are shares sold without a commission or sales charge. Generally, these shares are distributed directly by the investment management company, instead of going through a sales channel. They may have higher management fees to compensate for the lack of a front- or back-end load



Classes of Mutual Funds (continued)

- **Class Y Shares:** These are shares with very high minimum investments, i.e., \$500,000, but which have lower management fees and waived or limited load charges. These are generally for institutional investors
- **Class Z Shares:** These are shares only available for employees of the fund management company



Questions

- Do you understand the advantages, disadvantages, types and classes of mutual fund shares?



B. Understand how to Calculate Mutual Fund Returns

- How do you make money with mutual funds?
 - Capital gains (i.e. appreciation market value)
 - Capital gains are the best type of earnings as capital gains at the share level are not taxed until you sell your mutual fund shares. You decide when to sell your shares and get taxed
 - Distributions (i.e., interest, dividends, realized capital gains, etc.)
 - This is a less attractive type of earnings. Even though you do not sell any mutual fund shares and most investors reinvest earnings, you are still liable to pay taxes on all distributions that your mutual fund makes during the year



Mutual Fund Returns (continued)

- Distributions are divided into 5 main types:
 - 1. Short-term capital gains
 - Capital gains where the Fund has owned the assets for less than 12 months and which are taxed at your marginal tax rate”
 - 2. Long-term capital gains
 - Capital gains where the Fund has owned the assets for more than a year (366 days) where are taxed at preferential rate dependent on your taxable income (See next slide)



Mutual Fund Returns (continued)

- 3. Qualified stock dividends
 - Dividends by companies owned where the fund owned the shares for a specific length of time, and taxed at a preferential rate depending on taxable income
- 4. Ordinary (not-qualified) stock dividends
 - Dividends by companies where the fund did not hold the stock for the required length of time, and taxed at your marginal tax rate
- 5. Bond interest and bond fund distributions
 - Bond distributions are taxed at your federal and state Marginal Tax Rate

Mutual Fund Returns (continued)

2020 Tax Brackets, Capital Gains, Dividends, and Medicare Tax Rates (000s)

Taxable Inc. Filing Single [^]	Married		Ordinary Income	Cap. Gains & Dividends Tax Rate	Medicare Tax Rate		Total Cap. Gains & Medicare
	Head of Household [^]	Jointly [^]			Earned Income*	Net Invest. Inc. Tax	
-	-	-	10%	0%			
9,876	19,751	14,101	12%	0%	2.9%	0.0%	2.9%
40,126	80,251	53,701	22%	0%	2.9%	0.0%	2.9%
40,001	80,001	53,601		15%	2.9%	0.0%	17.9%
85,526	171,051	85,501	24%	15%	2.9%	0.0%	17.9%
163,301	326,601	163,301	32%	15%	2.9%	3.8%	21.7%
207,350	414,701	207,351	35%	15%	2.9%	3.8%	21.7%
441,451	496,601	469,051		20%	3.8%	3.8%	27.6%
518,401	622,051	518,401	37%	20%	3.8%	3.8%	27.6%

[^] The beginning of the tax bracket. * Combined rate = 1.45% employer contribution.

Net Investment Income Tax is calculated on your MAGI and Investment Income being above the Threshold. MAGI is AGI + foreign income + a few other areas. Your tax is on the excess above that threshold amount.



Mutual Fund Returns (continued)

- The key to after-tax returns is to understand the investment policy of the mutual fund (i.e., loads, turnover and distributions), and to invest in funds which have the highest after-tax return after all fees
 - By looking at a fund's turnover, you can get an idea about how often the mutual funds' managers turn over the portfolio, generating:
 - Capital gains and losses
 - Federal and state taxes, and
 - Transactions costs
 - These are all at the Fund level. Remember that you are taxed on these each year, even when your Fund loses money and when you have not sold the Fund



Mutual Fund Returns (continued)

- How do you calculate fund returns?
 - Mutual fund returns include distributions of dividends, capital gains, and interest, and any NAV appreciation
 - Total return:

$$\frac{(\text{ending NAV} - \text{beginning NAV}) + \text{distributions}}{\text{beginning NAV}}$$

Make sure you adjust your beginning and ending NAV's to take into account the cost of both front-end and back-end loads!



Mutual Fund Returns (continued)

- Calculating before-tax returns
 - With reinvestment of all distributions, total return includes the NAV share increase and the increased number of shares

Total return:

$$\frac{(\#ES \times EP) - (\#BS \times BP) + \text{Distributions}}{(\#BS \times BP)}$$

#BS = beginning shares owned BP= beginning price

#ES = ending shares owned EP = ending price



Mutual Fund Returns (continued)

- Calculating after-tax returns
 - With reinvestment of all distributions, total return includes the NAV share increase and the increased number of shares. After-tax (AT) Total return is:

$$\frac{(\#S_e \times P_e) - (\#S_b \times P_b) + SD + LCG + SCG + BDI}{(\#S_b \times P_b)}$$

Se = Shares Ending , Pe = Price Ending, Sb = Shares beginning ,
 Pb = Price beginning, SD = Stock dividends * (1-(Fed+State tax rate)),
 LCG = Long-term cap gains * (1-(Fed+State tax rate)),
 SCG = Short-term cap gains * (1-(Fed+State tax rate)), BDI =
 Bond dividends/interest * (1-(Fed+State tax rate))

Note: If your state has state income tax, your state tax rate is included in the calculations



How to Buy a Mutual Fund and the Costs of Investing in Mutual Funds

- What are the steps to buying a mutual fund?
 - 1. Determine your investment objectives, goals and your key principles of successful investing
 - 2. Select your risk level, asset classes, asset allocation, and investment benchmarks
 - 3. Identify funds in each asset class that meet your objectives and benchmark subject to your investment principles
 - 4. Evaluate the funds and choose wisely based on your key investment principles
 - 5. Send money or purchase online



Step 1. Determine your Investment Objectives

- What is the final purpose of the funds you will be investing?
 - Know your personal goals and budget
 - Determine your risk tolerance and return requirements for each goal
 - Determine your investment constraints for each goal
 - Determine where you are now in your investment program
 - Determine which key principles are most important to this investment



Step 2: Choose Your Asset Classes

- What are the asset classes you want to follow?
 - Know your risk tolerance and asset allocation
 - Invest at a risk level you are comfortable with
 - Keep your performance broadly based
 - Choose a benchmark with many constituents
 - Choose the benchmark that most matches the performance you are seeking
 - Benchmark choice is very important
 - Tell me your risk level and your asset class benchmarks, and I will tell you what your portfolio should look like



Step 3: Use a Database Program and Identify Funds That Meet Your Objectives

- One of the easiest ways to identify funds is to use financial publications and services
 - You can access databases from which you can input your objectives and which will give you lists of possible funds. Examples include:
 - Morningstar Mutual Funds
 - Schwab One Source
 - Other fee based databases
 - Determine the fund's objective, asset class, and investment style
 - Identify funds that meet your criteria for performance, size, fees, management, etc.



Step 4: Evaluate the Funds

- How do you evaluate funds (some advice from a fund manager in a previous career)?
 - Always compare funds with the same objective
 - Compare them to a relevant index
 - Evaluate the fund's long-term performance versus peers and the relevant index
 - Make sure they haven't inflated returns by buying outside their asset class.
 - Look at returns in both up and down markets
 - If they have historically under-performed peers and the index, avoid both and buy an index fund



Evaluate the Funds (continued)

- Look to the managers
 - How long have they been managing the fund, and were they managing during good performance periods?
 - Often good managers will leave when performance has been good to start their own firm, and others will come in later
- Size
 - How much has the fund grown or shrunk? If a fund is losing assets, it generally sells its liquid assets first
 - Often those left in a fund after liquidation are stuck with illiquid stocks that are harder to sell



Evaluate the Funds (continued)

- History
 - How long has the fund been around? Has it changed its style? How did it perform under previous names and managers?
 - Often fund companies will rename poorly performing funds and change investment objectives to mask poor performance
- Fees
 - Watch the fee structures. Sometimes funds will add additional fees, i.e. 12-b1 fees, or impose rear-end loads to help increase revenues to themselves
 - 12-b1 fees are paid by the shareholders and are just marketing fees. Avoid them



Evaluate the Funds (continued)

- Once you have selected a few funds, read each prospectus carefully
 - Information in the Prospectus
 - Fund information
 - Goals and investment strategy
 - Any limitations on investments that the fund may have, i.e., asset class constraints
 - Any tax considerations of importance to the investors
 - Services provided by the fund family
 - The redemption and investment process for buying and selling shares in the fund
 - Services provided to investors



Evaluate the Funds (continued)

- Information in the Prospectus
 - Manager information
 - The manager's past experience and how long he/she has been managing the fund
 - Performance and fees
 - Performance over the past 10 years, since inception, fund fees and expenses, annual turnover ratio, and minimum account size
 - Printed Sources of Information
 - *The Wall Street Journal, Morningstar Mutual Funds, Forbes or Business Week, Kiplinger's Personal Finance, Smart Money or Consumer Reports*
 - Electronic Sources of Information
 - www.fool.com Motley Fool
 - www.morningstar.com Morningstar



Step 5: Make the Purchase

- If you are planning to buy the fund through a financial broker, banker, or planner:
 - There is likely to be a load, or he will sell a class of share (i.e., R shares) which will rebate him a commission or charge an annual custody fee
 - Watch clearly for the class of shares sold
 - Research has shown, on average, that there is no statistical difference in performance between load and no-load mutual funds
 - You will get all the services of the mutual fund company
 - Ensure you can access your account through Quicken or other computer software



Make the Purchase (continued)

- If you plan to buy the fund directly from the mutual fund company:
 - Most of the time they are no-load funds and have no custody costs
 - You will get all the services of the mutual fund company, including an 800 number to call, internet access, and internet account information and servicing
 - Check to make sure you can access your account through Quicken or other computer software
 - Make sure your assets to be invested are more than the minimum account size



Make the Purchase (continued)

- If you plan to buy the fund through a “mutual fund supermarket” i.e., Fidelity Funds Network, Charles Schwab, or Jack White
 - You get all the benefits of the mutual fund company, plus they are Quicken compatible
 - You get access to a whole range of mutual fund companies (but not all of them)
 - Mutual fund companies rebate part of their management fees back each month to the “mutual fund supermarkets”
 - Minimum account balances vary
 - Transaction fees vary, but generally no custody fee



Questions

- Any questions on the costs of mutual funds and on purchasing a mutual fund?

A low-cost index fund is the most sensible equity investment for the great majority of investors. My mentor, Ben Graham, took this position many years ago, and everything I have seen since convinces me of its truth.

Warren Buffett



C. Understand the Costs of Mutual Funds

- What are the costs of mutual funds?
 - Explicit costs
 - Front-end Loads
 - Sales commissions charged to the investor when purchasing certain types of fund shares.
 - Back-end load funds
 - Commissions charged to the investor when selling certain types of shares. This may be on a sliding scale
 - No-load funds
 - Funds where there are no commission charged



Costs of Mutual Funds (continued)

- Fees and expenses
 - Management fees: Fee charged by the advisor to a fund generally on the basis of a percentage of average assets, i.e. 75 basis points or .75% a year
 - 12b-1 fees: Fees charged to cover the fund's cost of advertising and marketing (why should you pay to market the funds to someone else?)
 - Total expense ratio: the total percentage of assets that are spent each year to manage the fund including management fee, overhead costs, and 12b-1 fees



Costs of Mutual Funds (continued)

- Explicit costs (continued)
 - Custody (or annual) fees
 - These are fees the brokerage house charges to hold the mutual funds or ETFs in your account.
 - May be a minimum amount for small accounts (\$15 per year), a specific charge per holding (8 basis points per security), or a percentage of assets for large accounts (25 basis points on assets under management)



Costs of Mutual Funds (continued)

- Implicit costs
 - Taxes on Distributions:
 - Taxes must be taken into account to get the true return of your portfolio but which are not noted on your monthly reports
 - Bond dividends and interest
 - These are taxed at your marginal tax rate
 - Stock dividends
 - These are taxed at 15% or 0%
 - Short-term capital gains
 - These are taxed at your marginal tax rate
 - Long-term capital gains
 - These are taxed at 15% or 0%



Costs of Mutual Funds (continued)

- Hidden costs
 - Transactions costs
 - These are costs of the fund buying and selling securities, which are not included in other costs
 - A good proxy for this is the turnover ratio. Turnover costs money and incurs taxes
 - Hidden Costs (at the account level)
 - Account Transfer Fees - Charges for moving assets either into or out
 - Account maintenance fees - Fees for maintaining your account
 - Inactivity/Minimum balance fees - Fees because you had no activity or did not keep a minimum balance



D. Understanding Plans and Strategies for Mutual Funds

- Following are a few ideas for your plans and strategies for mutual funds
 - Plans and Strategies

Overall

- What are acceptable investments? Mutual funds are good at doing what they do well, mitigating the risk of buying individual stocks and bonds by allowing the purchase of diversified portfolios of specific asset classes (IV.A-D.)
- Mutual/Index/Exchange Traded Funds are great alternatives to actively managed mutual funds, and offer cost, tax, and other advantages



Plans and Strategies for Mutual Funds (continued)

- Plans and Strategies

 - General Investing*

 - Due to the many different types of stocks and bond mutual funds, investors can invest at differing risk levels with mutual funds
 - Index funds/ETFs are great alternatives to actively managed mutual funds, and offer cost, tax, and other advantages
 - While risk of individual stocks and bonds can be high, buying mutual funds can reduce that risk considerably



Plans and Strategies for Mutual Funds (continued)

- *General Investing (continued)*
 - If you are choosing to put in a little each week or month, choose no-load mutual/index funds due to no transaction fee.
 - If you are making one large purchase and holding it long-term, choose the ETF due to its slightly lower annual costs
 - Remember that most actively managed funds fail to beat their benchmarks after all costs and fees, and most index funds return close to their benchmarks.



Review of Objectives

- A. Do you understand the advantages, disadvantages, and major types of mutual funds?
- B. Do you understand how to calculate mutual fund returns?
- C. Do you understand the process of how to buy a mutual fund?
- D. Do you understand the costs of investing in mutual funds?



Case Study #1

Data

- Bill and Sally invested in the following mutual funds in 2016. They are in the 25% federal and 7% state marginal tax brackets. (Remember in 2017 that qualified stock dividends and long-term capital gains are taxed Federally at 15% if your marginal tax rate is 25%). You can use [Calculating After-tax Security Returns \(LT33\)](#) to check your answers.

Calculations

- Calculate the before tax and after-tax return on each of the funds in their portfolio for 2016 (from 12/31/15-12/31/16)
- Calculate their overall portfolio before-tax and after-tax return. Note that the first three funds are all taxable, the municipal bond fund is federal tax-free for interest only, and the Treasury bond fund is state tax-free for interest only.

Fund Name	Ending NAV	Beginning NAV	Short-term Distributions	LT CGain & Qual. Div.	Short-term Cap. Gain	Weight in Portfolio
FIDELITY MAGELLAN FUND (FMAGX)	91.36	89.43	0.546	2.119	-	50%
SCHWAB SMALL-CAP INDEX-SEL (SWSS)	28.1	24.1	0.391	0.762	-	10%
VANGUARD S/T BND INDX-INV (VBISX)	10.43	10.43	0.146	0.001	0.001	20%
WFA MUNICIPAL BOND FUND-INV (SX)	10.34	10.45	-	-	-	10%
VANGUARD SHRT TRM TREAS-INV (VFI)	10.64	10.65	0.094	0.002	0.030	10%
For the period beginning 20151231 and ending 20161231						



Notes to Case Study #1

- Notes: ST = short-term distributions. For bond funds, these are interest and short-term capital gains, for stock funds they are non-qualified dividends, interest, and short-term capital gains. LT CG Distr. = Long-term capital gains distributions. Qual. Stock Distr. = qualified stock dividend distributions. % Portfolio is the beginning weight of the assets in your portfolio. Remember your overall portfolio return is your return of each asset times your beginning period weight
- To calculate the after-tax return from each asset, determine the amount of taxes you will pay on each type of earning. Since you have not sold the assets, the only taxes you will pay will be those on the distributions you have received. Subtract out the taxes on distributions to give you the distributions you get to keep, and calculate your return
 - $(NAV_{\text{Ending}} - NAV_{\text{Beginning}} + (\text{Distributions} * 1 - \text{tax rate})) / NAV_{\text{Beginning}}$
- Remember that the tax benefits on municipal and treasury bonds are only on the interest distributions. You still must pay all taxes on the capital gains distributions

Federal Marginal Tax Rate	25.0%
State marginal Tax Rate	7.0%

Federal Tax on Qualified Dividends	15.0%
Federal LT Capital Gains Rate:	15.0%

LT33

	Ending Net Asset Value (NAV)	Beginning Net Asset Value	Short-term Distr. (1)	Long-term Capital Gains Distr.(2)	Qualified Stock Distr. (3)	Short-term Capital Gains Distr. (4)	Percent of Portfolio (5)	Fund Return
Stock Funds (all taxable):								
Fidelity 500 Index	91.36	89.43	0.546	2.119			50%	5.14%
Tax Rate (all taxable)			0.320	0.220	0.220	0.320		
AT Return		1.93	0.371	1.653	-	-		4.42%
Schwab Small Cap	28.10	24.10	0.391	0.762			10%	21.38%
Tax Rate (all taxable)			0.320	0.220	0.220	0.320		
AT Return		4.00	0.266	0.594	-	-		20.17%
Bond Funds:								
Corporate Bond Funds (all taxable):								
Vanguard ST Bond	10.43	10.43	0.146	0.001	-	0.001	20%	1.42%
Tax Rate (all taxable)			0.320	0.220		0.320		
AT Return		-	0.099	0.001	-	0.001		0.97%
Muni Bond Funds (Federal Tax Free for Interest only (5)):								
WFA Muni Bond	10.34	10.45			-		10%	-1.05%
Tax Rate (Fed tax free)			0.070	0.220		0.070		
AT Return		(0.11)	-	-	-	-		-1.05%
Treasury Bond Funds (State Tax Free for Interest Only(5)):								
Vanguard ST T- Bond	10.64	10.65	0.094	0.002	-	0.030	10%	1.09%
Tax Rate (state tax free)			0.250	0.220		0.250		
AT Return		(0.01)	0.071	0.002	-	0.023		0.79%
Overall Portfolio Weight:								100.00%
Overall Portfolio Before Tax:								4.99%
Overall Portfolio After Tax:								4.39%
Notes:								



Case Study #2

Background

- Bill is concerned about turnover. He knows that for financial assets, the turnover rate is a measure of the amount of trading activity completed during a year; the turnover rate is expressed as a percentage of the average amount of total assets in the fund. A turnover rate of 10 percent means that 10 percent of the average amount of total assets in the fund were bought and sold during the year. He also knows that as a mutual fund investor must pay taxes on any distributions received during the year, including distributions the investor reinvests in additional shares. While high turnover *may* lead to higher returns, high turnover *always* leads to higher transactions costs as well as increased taxes if assets are held in taxable accounts
- Bill's marginal tax rate is 35 percent, and he lives in a state that does not have a state income taxes, so his short-term distributions will be taxed at 35 percent



Case Study #2 Answers

Data

- The following information is for two of Bill's bond mutual funds:

Mutual funds	Fund A	Fund B
Beginning NAV	\$100.00	\$10.00
Short-term distrib.	\$1.00	\$0.90
Ending NAV	\$109.00	\$10.10

Calculations

- A. Calculate Bill's before tax and after-tax returns on Fund A and Fund B (his marginal tax rate is 35%)
- B. What would have changed had the mutual funds been stock mutual funds and the distributions were qualified stock dividend distributions instead of bond distributions?



Case Study #2

A. Bill's before-tax and after-tax returns are:

	Fund A	Fund B
YTD nominal returns	10% (note 1)	10%
Estimated Turnover	10%	90%
Taxes on short-term distributions		
	35%	35%
Taxes paid (on short-term distributions)		
	\$0.035	\$0.315
After-tax return	9.65%(note 2)	6.85%
Loss from nominal return due to taxes		
	0.35%	3.15%



Case Study #2 Answers

- To calculate Bill's before-tax return, the formula is $(\text{ending NAV} + \text{distributions} - \text{beginning NAV}) / \text{beginning NAV}$.
 - Fund A: $(109 + 1 - 100) / 100 = 10$ percent.
 - Fund B: $(10.10 + 0.90 - 10.00) / 10.00 = 10$ percent.
- The formula for finding the after-tax return is:
- $[\text{ending NAV} + ((\text{distributions} - \text{taxes paid}) - \text{beginning NAV})] / \text{beginning NAV}$, or:
 - Fund A: $(109 + ((10 - 3.50) - 100) / 100 = 9.65\%$
 - Bill pays taxes of $\$0.10 * .35$ and keeps $\$.10 * (1-.35)$
 - Fund B: $(10.10 + ((0.90 - 0.315) - 10.00) / 10.00 = 6.85\%$
 - Bill pays taxes of $.90 * .35$ and keeps $.90 * (1-.35)$ ⁵⁸



Case Study #2 Answers

- Regarding fund A, Bill pays 35% or \$3.50 in taxes on a \$10.00 distribution. Thus, his nominal return is 10%, after-tax return is 9.65%, and he loses 0.35% to taxes.
- Regarding fund B, Bill pays 35% or 31.5¢ in taxes on a ninety-cent distribution. Thus, his nominal return is 10% but his after-tax return is 6.85%, and he loses 3.15% to taxes
- Although both funds have the same nominal return and the same tax rate, fund B's return is 29% lower because of taxes related to higher turnover. Clearly, understanding taxes is very important. Know your tax-rate on each type of earnings



Case Study #2 Answers

- If the distributions would have been stock dividend distributions instead of short-term distributions, instead of paying taxes at 35% which is Bill's ordinary income rate, he would pay a preferential tax rate of only 15% for both Fund A and Fund B.