**Mutual Funds**

* Investment companies
	+ Pool together funds from a group of investors in order to purchase a portfolio of assets, then they manage that portfolio
	+ Advantages:
		- Diversification
		- Divisibility
		- Money management
			* Active vs. passive
		- Reduced transaction costs
	+ Disadvantages:
		- Mutual funds often advertise that they outperformed an index
			* Indexes are not good comparisons for funds
		- Investment companies charge fees, which might outweigh their benefit
			* Most mutual funds underperform when we deduct their fees
			* Fees can vary significantly between funds even when they have the same investment strategy or are managed by the same company
* Caution: misleading reporting
	+ Investment companies are required to disclose their holdings once a quarter using SEC form N-Q
		- Also required to disclose under certain other circumstances on SEC form N-CSR
		- This info is also disseminated directly to shareholders via annual reports/prospectuses/advertisements
	+ We have no way of knowing whether they owned those shares for the full 3 months, 1 month, or 1 day
	+ Window dressing: funds will often buy high-performing stocks shortly before the quarter end to make themselves look better
* Types of investment companies
	+ Open-end funds (mutual funds)
		- Actively or passively managed
		- Issues an **unlimited number** of shares of investments in stocks or bonds
			* Shares are **bought and sold on demand at their NAV, only at the end of the day**
		- Not allowed to trade shares on an exchange
		- **Redeemable securities**: fund stands ready to buy back at NAV
			* NAV: Net Asset Value
			* The fund is required to do this every day except for holidays or when trading is restricted, so they issue and redeem shares daily
			* Usually maintains cash or liquid security reserves to fund withdrawals
		- Investment objective is to outperform a benchmark, and a portfolio manager trades to meet that objective
	+ Closed-end funds
		- Traded on an exchange at market-determined prices, so prices are continuously changing
		- Fixed number of shares
		- Non-redeemable shares
* Unit Investment Trusts (UITs)
	+ Type of investment company
	+ Money pooled into a fixed portfolio, doesn’t trade so once you choose companies to invest in you stick with them
	+ Designed to provide capital appreciation/ dividend income
	+ Only exist for a certain period of time, then the shares are liquidated
		- Often 2 years or less
	+ Investment relatively uniform across assets
		- Passively invested from start to finish
	+ Tend to have higher fees than open and close ended funds
		- High purchase and sales fees
		- Operating fees tend to be low
* Exchange-Traded Funds
	+ Mutual fund or unit investment trust whose shares are traded intraday on stock exchanges at market-determined prices
	+ Creation
		- Sponsor chooses investment objective (index or active)
		- Publish info about holdings daily
		- Required to post marked-to-market NAV at end of each trading day
	+ Key differences with mutual funds:
		- Shares are traded on an exchange through a broker-dealer
			* ETF trades like a common stock on a stock exchange
		- Price is continuously changing throughout the day
		- Mutual funds calculate NAV as of 4pm eastern, ETFs do not have a NAV in the same way that close end funds don’t
	+ Differences with closed end funds:
		- Close end funds issue a fixed number of shares, ETFs can create or redeem shares continuously
		- ETFs managed passively and closed end funds managed actively
* How are mutual funds valued?
	+ The value of a mutual fund = its Net Asset Value
		- NAV: a per share measure of the difference in the value of the fund’s assets and its liabilities
		- NAV = (MV of Assets – Liabilities) / Shares Outstanding
			* Assets: market value of portfolio
			* Liabilities: expenses and fees
* Example: Net Asset Value
	+ An open-ended mutual fund has $200 million of assets under management. It has liabilities of $15 million and there are 10 million shares outstanding. What is the fund’s NAV?
* Mutual Fund Costs: Fees and Expenses
	+ Paid directly by investors:
		- Front-end load
			* Commission or sales charges
		- Back-end load
			* Early exit fee
			* Contingent deferred sales charge
			* Because back-end loads phase out over time, they may be preferable to you as an investor, as long as your investment horizon is long enough to wait it out
	+ Paid out of the fund’s assets:
		- Operating expenses
			* Pays costs of managing the fund
			* Typically 0.2-2%
			* Includes the management fee
		- 12b-1 fees
			* Marketing and distribution fees
* Fund Returns
	+ Return = (NAV1 - NAV0 + Income and Cap Gain Distributions) / NAV0
		- Operating and 12b-1 fees are deducted when calculating NAV, so this measure is net of those expenses
		- Loads are paid directly by the investor, so they are not accounted for in this calculation
		- Fund return = gross return on portfolio – total expense ratio
			* Total expense ratio = operating expenses + 12b-1 fees
			* This calculation is still too high since it doesn’t account for the loads you pay
* Purchase price with front-end load
	+ Loads are paid out of our total expenditure, rather than being added on to the price. This means we’ll actually pay:
		- Price = NAV / (1 – Load %)
			* NAV = Price x (1 – Load%)
	+ Example: You’re considering purchasing a fund whose NAV at the close of trading is $32. If the fund has a front-end load of 2%, what will be the price you pay?
	+ If you purchased a fund with a 3% front end load for $18, what was the NAV at the close of trading?
* Understanding Loads
	+ Loads are different than other charges you may be familiar with, like tips or sales tax
		- Those are a % of the original price added on
		- The load is a % of the total paid
	+ Example: consider the costs of a 7% sales tax vs. a 7% load on a $100 NAV fund:
		- Price using tax = 100\*1.07 = $107
			* Tax = 107-100 = $7
		- Price using load = 100 / (1-.07) = $107.53
			* Load = 107.53-100 = $7.53
* Other load issues – Phase out
	+ Back-end loads tend to phase out over time
		- We might only pay a portion (given long enough) or nothing
	+ These generally phase out uniformly, so we can calculate the remaining load as:
		- Back-end load owed = back end load % - years held
	+ Note: if you hold the shares for the entire phase-out period (or longer), you don’t owe the back-end load
* Putting it together: loads vs. fees
	+ When we combine the effects of loads and fees on our returns, our annual return on an investment in a mutual fund is
	+ Notes:
		- We only pay the load once, so we only deduct it one time
			* Doesn’t matter if its front or back end
		- We pay fees every year so they reduce our return each time
* Using BA II Plus for r
	+ Common question: given the required return and asked what return the mutual fund must be earning
	+ Inputs
* Example: You are considering an investment in a fund with a 4% front-end load and a management fee of 1%. You can invest in a bank CD paying 5% interest. What return must the portfolio earn for you to be better off in the fund than the CD over a 3 year horizon? What about a 10 year horizon?
* Example: You are considering an investment in a fund with a 12b-1 fee of 2% per year and a management fee of 1%. You can instead invest in a CD paying 5% interest. What return must the portfolio earn for you to be better off in the long run?
* Example: considering an investment in a mutual fund advertising operating expenses of 2% per year. The fund also charges 12b-1 fees totaling 1% and has a back-end load of 5%, which phases out over 5 years. You plan to hold the mutual fund for 3 years and expect a 13% annual return. What is your annual return?