**Unit 2 Study Guide**

**Indices**

* Market indices
	+ Index: statistical composite measuring changes in the economy or financial markets
		- Used to measure the ups and downs of stock, bond, and some commodities markets
		- Often used as a performance benchmark, represents economy performance
* Dow Jones
	+ Best known, oldest index
	+ 30 large, well-known industrial stocks
		- Known as “blue chips” but it’s not exclusive anymore
		- Examples: Apple, Chevron, Coke, Disney, Goldman Sachs, Home Depot, IBM, Nike, etc.
		- Cannot directly invest into it, but can use these companies’ returns when creating your portfolio
	+ Price-weighted average
		- DJIAt=sum of stock prices/d
	+ Dow divisor: d
		- Adjusted for stock splits and changes in the composition of the index
		- 0.1452 as of November 2017
* S&P 500
	+ Roughly the 500 largest public companies in the US
	+ Value-weighted average
		- S&P500t= (sum of prices x shares outstanding)/divisor
	+ Float-adjusted
		- Shares outstanding is reduced to exclude closely-held shares
			* Closely held: shares held by a small number of SH who are either directly affiliated with the company or management
		- Float: the number of shares that are actually available for trading
	+ Divisor adjusted to account for index changes
		- Not publicly released, often need to estimate
		- Approximately $8.56B as of September 2017
* Commonly used: Market Sectors
	+ Use if you want your index to cover particular types of businesses in the market
		- Data providers will generally use some classification system
		- May be referred to as sectors, industries, or segments
* Classification standards
	+ 4 widely used
	+ Financial press will use one of the first two, researchers and analysts will use one of the last two
		- Global Industry Classification Standard (GICS)
			* Created by MSCI and S&P
			* Divides the market into 11 sectors, 24 industry groups, 68 industries, and 157 sub-industries
		- Industry Classification Benchmark (ICB)
			* Created by Dow Jones and FTSE (now solely owned by FTSE)
			* Divides market into 10 industries, 19 supercenters, 41 sectors, and 114 subsectors
		- Standard Industry Classification (SIC)
			* Created by the US government
			* Assigns a 4-digit code to each firm
			* 1=most broad, 4=most specific
		- North American Industry Classification System (NAICS)
			* Created by a joint effort between US, Canada, and Mexico
			* Intended to replace SIC, most government agencies use NAICS but the SEC still uses SIC codes
			* Assigns a 6-digit code to each firm
				+ 1=country
				+ 6=industry
* Prices vs. Returns
	+ DJIA and S&P 500 adjusted by a divisor for aesthetic reasons
	+ Generally only interested in the returns of an index
		- Only need to worry about stock splits
		- Can adjust for a split by converting the starting price/shares for that period as if the split had already occurred
	+ More focused on the weighting
* Weighting
	+ 3 major ways of weighting an index:
		- Value-weighting
			* Firms with the highest market capitalization are given higher weight
			* Equivalent to buying 1% of each firm
			* The most common way of weighting an index
		- Equal-weighting
			* All the securities are given the same weight
			* Equivalent to investing $1 in each security
			* Situationally useful, used in some regression models
		- Price-weighting
			* Firms with higher stock prices are given higher weight
			* Equivalent to buying 1 share of each security
			* Each stock influences the index in proportion to its price per share
			* Generally obsolete, we almost always prefer others
* Basic index return
	+ Index return = (ending index value-beginning index value)/beginning index value
* Price weighting
	+ Provide more weight to firms with higher stock prices
	+ Can add up the stock prices of each firm:
		- Index value = ΣPrice
	+ Note: if a stock split occurs, divide the **starting price** of that stock by the number of shares exchanged for each share
		- Ex. Divide price by 2 if it is a 2-for-1 split
	+ Example
		- Given the following data on 3 firms:

|  |  |  |
| --- | --- | --- |
| Company | Nov 30 close | Dec 31 close |
| Orange Computer | $50 | $60 |
| Ceiling Mart | $20 | $18 |
| Tarjay | $60 | $33 |

* + - You know that Tarjay had a 2 for 1 stock split on December 15. What would be the daily price level of a price-weighted index of these 3 firms on both days? Its return?
* Value weighting
	+ Provide more weight to firms with higher market capitalization
	+ Can add up the market caps of each firm:
		- Index value = Σ Price x Shares Outstanding
	+ Note: if a stock split occurs, the changes should **cancel each other out**
		- Ex. The price should be cut in half while the number of shares double in the event of a 2 for 1 stock split
	+ Example
		- 3 firms:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Company | Nov 30 Close | Shares | Dec 31 Close | Shares |
| Orange Computer | $50 | 1000 | $60 | 1000 |
| Ceiling Mart | $20 | 5000 | $18 | 5000 |
| Tarjay | $60 | 1250 | $33 | 2500 |

* + - Tarjay had a 2 for 1 stock split on December 15. What would be the daily price level of a value-weighted index of these 3 firms on both days? Its return?
* Equal weighting
	+ Treat each security as equally important
	+ Directly calculating the price level can be difficult
		- Assign a starting value and then compound returns on it
	+ The return is the average of the individual security returns:
		- Index return = 1/N Σr
		- Find each individual return, then find the return of those returns
			* Divide by the number of stocks in the portfolio
	+ Note: if a stock split occurs, divide the **starting price** of that stock by the number of shares exchanged for each share
		- Divide price by 2 for a 2 for 1 split
		- Same as price-weighted
	+ Example

|  |  |  |
| --- | --- | --- |
| Company | Nov 30 close | Dec 31 close |
| Orange Computer | $50 | $60 |
| Ceiling Mart | $20 | $18 |
| Tarjay | $60 | $33 |

* + - Tarjay had a 2 for 1 stock split on December 15. What would be the return of an equally-weighted index over this period?
* Equal weighting
	+ Using the return from the previous example, suppose the index started at 1 on November 30. What is its value December 31?