**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?