Background & Highlights
Since the stock market crash of 1929, Discounting Cash Flow (DCF) has become one of the prevalent model of valuing firms that has employed by many US institutional investors including Warren Buffet, a prominent investor and philanthropist. The method, however, shows its limitations in forecasting the intrinsic value of Companies in South Korea and their intrinsic value of a stock price. Using the same figures of US firms simply does not apply to Korean firms. Through Researching and Running Multiple times of a designed FCF model by Tong Yao, Associate Professor of Finance at the Tippie College of Business, there seem to be reasonable inputs that could reduce the dispersion between the market value of firms and the intrinsic value of firms. These variables are Beta, Risk Premium rate, Risk Free rate, Cost of Debt, Tax Rate, and Debt to Value of Operations. Each company is exposed to different risk levels, thereby, estimating and adjusting the variables based on what kinds of industry are crucial to lessen the dispersion and forecast the fundamental value of firms.

Assumptions & Methods
1. Collect financial statements from FactSet.
2. Gather the current stock beta and the current stock price from Yahoo! Finance for US companies and from Naver Finance for Korean companies.
3. Assume that expected market risk premium remains constant by 6% for US companies and is 7.45% for Korean companies.
4. Assume that risk-free rate for US companies remains constant by 4% and is 2.55% for Korean companies.
5. Assume that the cost of debt will remains constant by 6% for US companies and is 6.44% for Korean companies.
6. Use analysts’ consensus revenue forecasts to drive the growth rate.
7. Assume that sales growth rate decreases at constant and converge to 3.5% by the terminal year (2029).
8. Use the ratio of EBITDA, non-operating assets, fixed assets, and depreciation from analysts, and assume the ratios stay same at the CV year.
9. Assume that Operating Working Capitals are constant at the CV year.
10. Assume that the terminal growth rate is 3.5%.
11. Calculate the Debt/Enterprise Value using # shares outstanding, stock price, normal cash, and non-current liabilities including short-term debt.
12. Calculate the WACC and the corresponding cumulative discount rates.
13. Discount the total free cash flow to bring it to PV and discount the terminal value by the same discount rate.
14. Sum the value of operations and that of non-operating assets to calculate for the intrinsic value of the firms.
15. Divide the intrinsic firm value by the number of outstanding shares is the intrinsic stock price of the firm.
16. Compare the intrinsic stock price with the market stock price to see the difference between two prices.
17. Conduct the sensitivity analysis to see what variable is causing the most deviation in each US and Korean firm.

Limitations
- Risk Free Rate
  This model assumes the risk-free rate of US to be constantly 4%, which is the historical average over a long horizon. Valuing equity, however, can be based on the yield on 30-year Treasury Bond, which is 2.47% as of April 2nd, 2015. For some companies, changing risk-free rates from 4% to 2.47% makes the intrinsic price closer to the market price. But, this may not be the case for other companies.
- Market Risk Premium
  Market risk premium used for this model is 6%, which is the reasonable estimate derived from the U.S. historical average risk premiums. As of 2014, the historical average of risk premium is 4.62%. On April, the forward-looking MRP has released by NYU Finance Professor. This rate is 5.24%. The average of these two percentages give 5.24%, which is slightly deviated from 6%.
- Beta
  Each Financial website uses different ways to figure out the Beta. Therefore, Beta may not be consistent industry-specific wise or firm-specific wise.
- Cost of Debt
  Cost of Debt for Korea is not publicly released. The borrowing rates for firms may not be the accurate estimates.

Data:

Preliminary Conclusion
While the price of technology firms moves in the opposite direction, that of energy firms are positively correlated. The price of internet companies also move in the opposite direction, whereas that of construction firms move in the same way. The debt to enterprise values of an automobile industry are also larger than that of other industry. Both of these companies are undervalued.

The question is what variables are causing these deviations? Are the differences arising from market factors or are they coming from firm-specific factors, such as capital structures? How similar industry firms can have different movements? These questions are going to be analyzed throughout the rest of the semester. The conclusion should reduce the abnormal gap between the market price of the stock and the intrinsic price of the firm and further give the better estimates of risk-free rates, market risk premium rates, and cost of debt.

References: Yahoo! Finance, FACTSET, NAVER