Philip Umanoff
Professor Zelikovits
CSC 245

Issues I Faced

As we talked about in our meeting together, the primary obstacle I faced with my project was not having enough data to apply some of the techniques we learned in class. The dataset I found only consisted of "Dates' and 'PE Values' so I did not have any features to compare with 'PE Values' to search for potential correlations. When I started the project I did realize that it would be difficult but thought that I would be able to make a big discovery upon analyzing each of the crashes. However, the Exploratory Data Analysis only raised more questions than answers.

What I Discovered

In the Project (Parts 1 and 2).ipynb which I uploaded on the Final submission, you can see that I identified the MIN and MAX before each crash, as well as the MIN after the crash. I noticed that in each crash, the PE Ratio nearly doubles within a 3-5 year period before crashing significantly. There was just one outlier which was the 2008 crash, which saw the highest PE Ratio of all time at 123.73!

Here are my findings in a simple table:

YEAR	MIN Before Crash	MAX Before Crash	MIN After Crash
1929	(1926-02-01) **9.21**	(1929-12-01) **20.17**	(1930-01-01) **13.94**
1989	(1984-02-01) **9.26**	(1989-12-01) **21.42**	(1990-01-01) **14.21**
2001	(1999-02-01) **26.5**	(2002-12-01) **46.71**	(2003-01-01) **16.61**
2008	(2005-02-01) **16.61**	(2009-12-01) **123.73**	(2010-01-01) **13.5**

What I Would Need to Continue

To continue with this research, I would definitely need more features/columns to find potential correlations with PE Ratios to be used in a regression model. I think some interesting data that have the strongest potential to further my research would be data pertaining to:
- America's GDP
- Rate of Inflation
- Unemployment Rate
- Trading Volume
- US Interest Rate

`Out of these features, I am definitely most compelled by trading volume, as I can definitely picture how there is more trading volume before a crash as people are rushing to constantly buy assets to make money quickly, and after a crash there is probably an immense amount of sell orders as people panic when they see considerable losses on their assets.