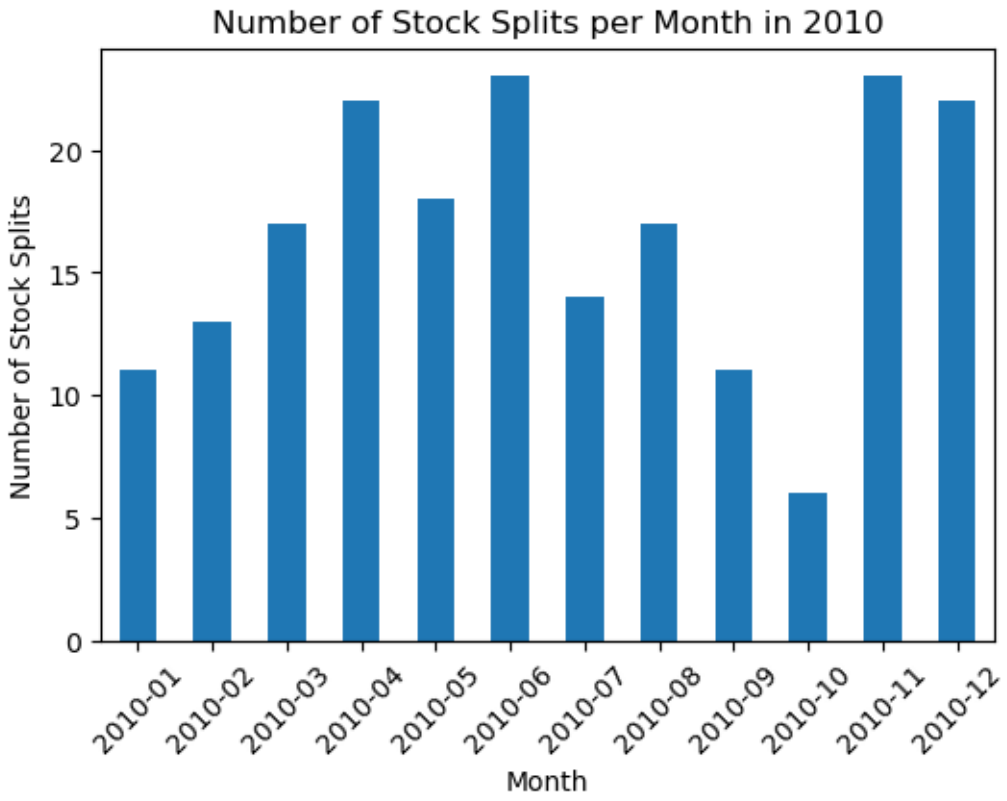
Corporate Finance (event studies)

October 21, 2024

1 Part A: Stock Splits

We will perform an event study on stock splits for the year 2010 using CRSP daily return data. For this we used a query that gets the data from WDRS, focusing on S&P500 companies. We will first look at the number of stock splits per month in 2010, to do so, we will look at the payment date instead of the declared date, since the latter one has many missing information.



1.1 Average CAR across all stock splits

We then use a new query where we include the stock price return (retx) and the S&P500 return which will be our market return. With this we will look at the average CAR for Event Window (-1, +1) using a one-step approach and a two-step approach.

1.1.1 First approach: Normal model for abnormal returns

We estimate a normal return model (market model) using data prior to the event window. This involves regressing stock returns against market returns:

$$R_{it} = \alpha + \beta_i R_{mt} + e_{it}$$

Then we calculate the abnormal return for each stock split for each day in the event window as:

$$AR_{it} = R_{it} - E[R_{it}]$$

Then we finally calculate the CAR as:

$$CAR = \sum_{t=-1}^{1} AR_{it}$$

After calculating the average CAR across all splits, we look at the significance an for this method we find that it is not statistically significant, something that is not in line with most research, suggesting that further analysis should be done over how the data has been managed, or with how we model the "normal market model".

```
Average CAR (-1 to +1): 0.009288579082876327
T-statistic: 1.6892749360083898, P-value: 0.09537624698732658
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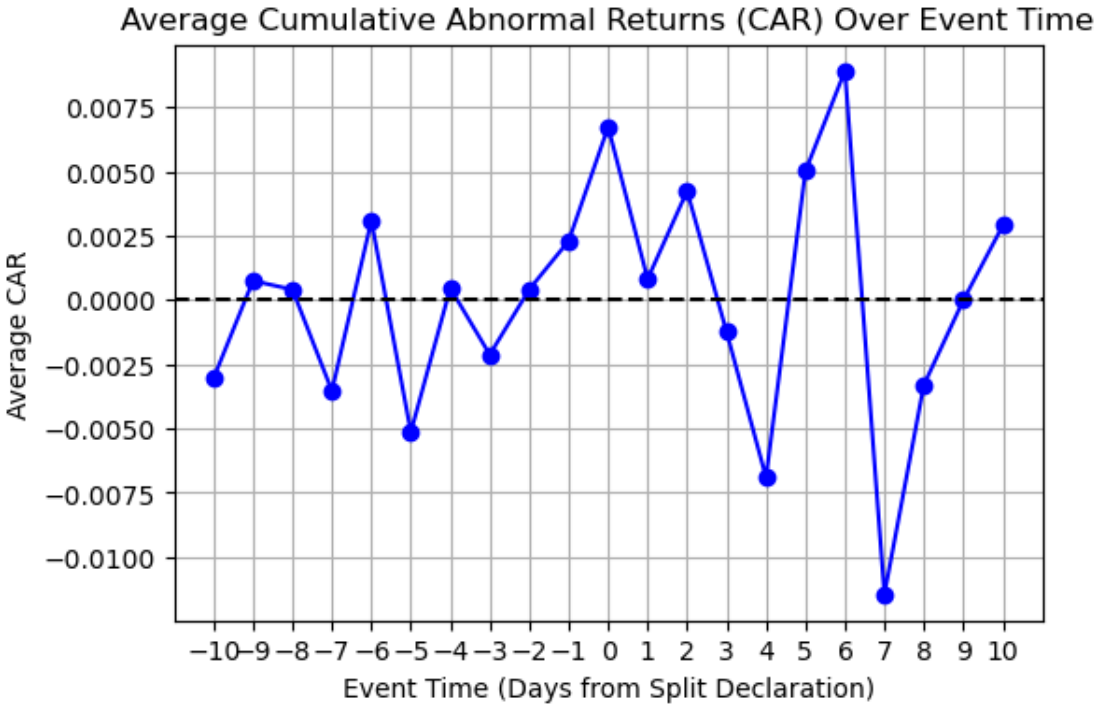
Here's also a plot of the average CAR over time:



1.2 Second approach: Simple regression using a dummy variable

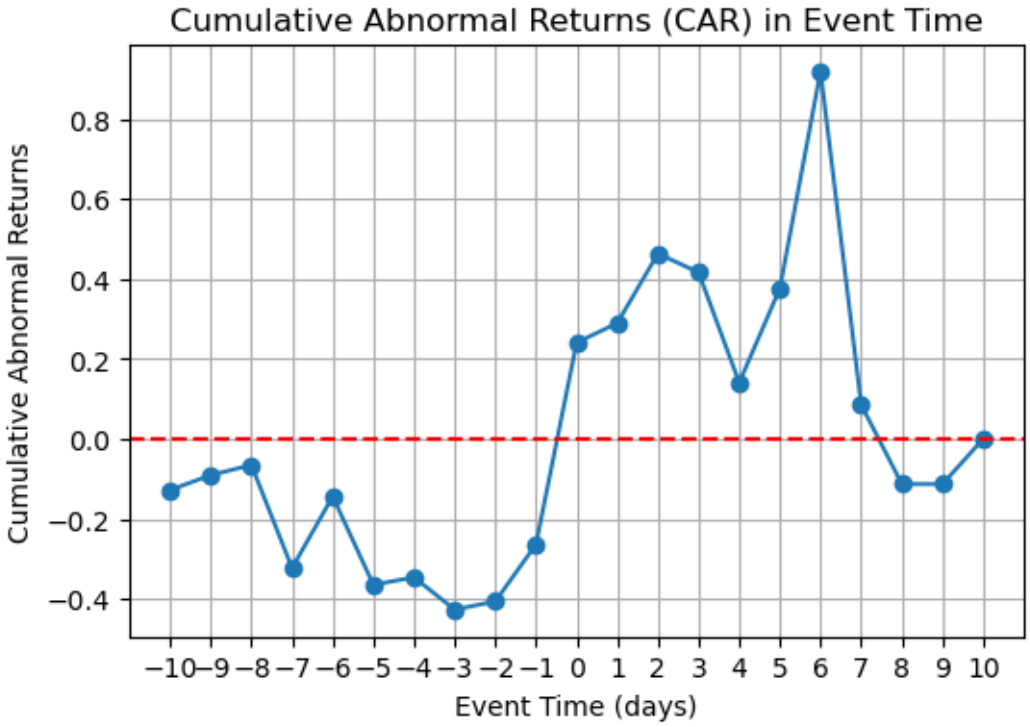
For this approach we will use a dummy variable for the event window and then we run a simple regression with daily returns as our dependent variable, here's the model:

$$R_{it} = \alpha + \beta_i R_{mt} + \lambda \cdot \mathrm{D}_{it} + \epsilon_{it}$$

This time we find a p-value that suggests that the stock splits effect on the market price is statistically significant:

```
Average CAR (coefficient of event dummy): 0.004324589878637511
T-statistic: 2.1961728222999826, P-value: 0.028289642724378162
```

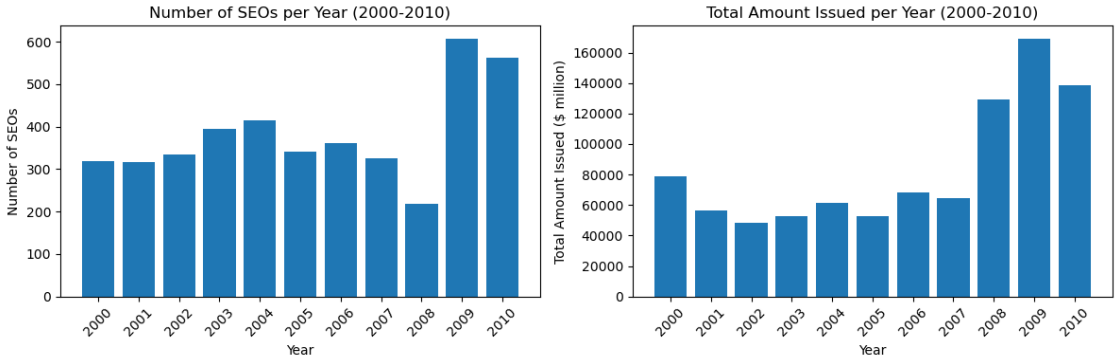
We have to be careful with this result, since the one-step approach can only be a first look into the possible effect, the two step approach for example is better suited at addressing the relation between stock price and stock splits, especially if we do it by using different normal market models (CAPM, Fama, …). Here's a graph for the CAR in the event time calculated using a one step approach.



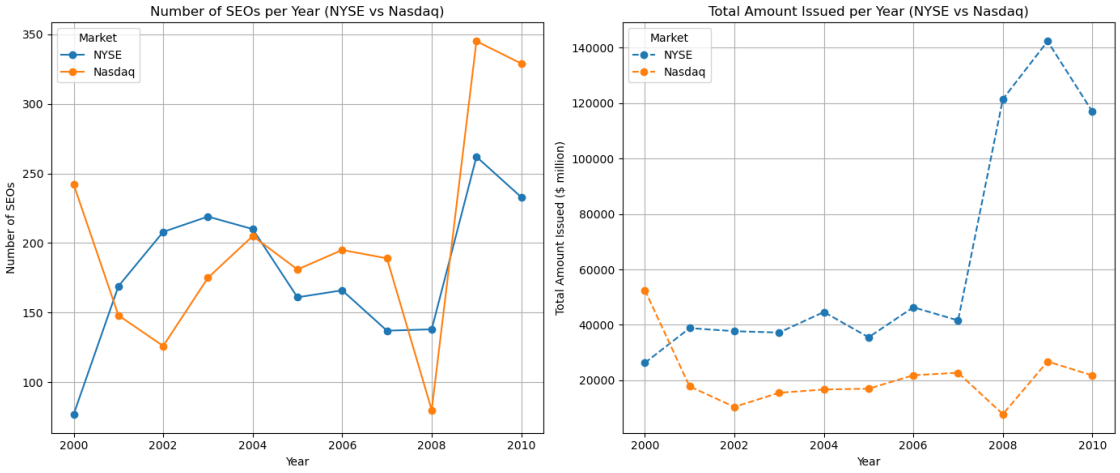
2 Part B: Seasoned Equity Offering

For this part we will be using a dataset on Seasoned Equity Offerings from 2000 to 2010. The data has been filtered to focus only on the issuance of Common Shares (non IPO firms) on the NYSE and NASDAQ in USD, filtering out also to consider only values where the amount issued is non missing.

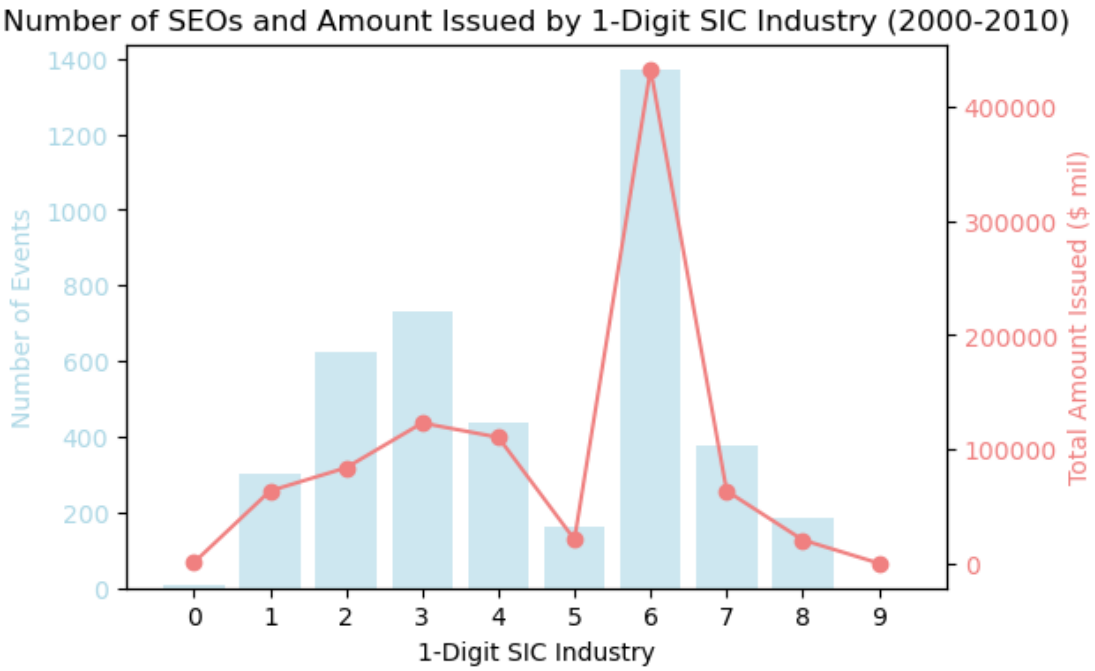
Here's a plot showing the number of SEOs per year and the total amount issued per year side by side:



Below we will look at the differences between the two markets, NYSE and NASDAQ, in terms of number of events happened every year and the total amount. What is very interesting to see is that in both these two graphs and the previous ones, the aftermath of the 2008 crisis made these SEOs so popular.



The graph below shows which industries have the highest number of such events and the highest amount and we can clearly see how whole sale and retail trade is the main issuer with manufacturing as the second one (per world bank SIC coding)

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The average time between two issues for the same company is 550.01 days.
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2.1 CAR (-1, +1)

We will now look at the average CAR (-1;+1) across all issuances on the whole period and the break-down by year. To do this we used the cusip code to extract data from CRSP. With that, we decided to calculate abnormal returns by using an estimated normal model doing a regression with the market return, so we used the same model as we did in part A with the two step approach. We define event and estimation windows by using the SEOs Issue Date from the SDC data, that way we can filter the return date for the CUSIP and the defined windows. From here for each SEO we used the model defined above. Below you will see the breakdown by year of average CAR (-1, +1) across all issunce and a plot of CAR across t=-10 and t=+10

```
Average CAR (-1, +1): -0.027471788993529013
    Year  CAR (-1, +1)
0   2000     -0.052636
1   2001     -0.021183
2   2002     -0.022815
3   2003     -0.003173
4   2004     -0.015148
5   2005     -0.013136
6   2006     -0.019243
7   2007     -0.013911
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8	2008	-0.047239
9	2009	-0.046617
10	2010	-0.038869