Assessment 1

LSE ID: 202252142

I downloaded the data used in this project from Wharton Research and Data Services-Center for Research in Security Prices dataset. The two companies are Chevron Corporation and Exxon Mobil Corporation.

Figure 1:Prices of XOM and CVX

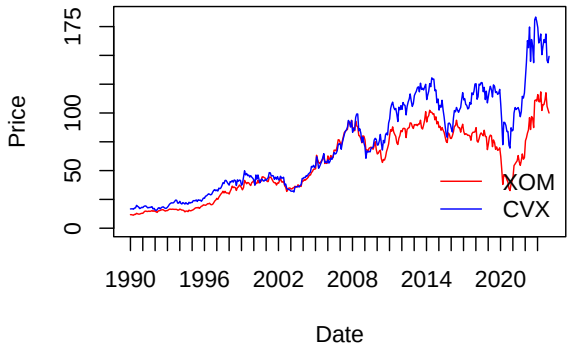
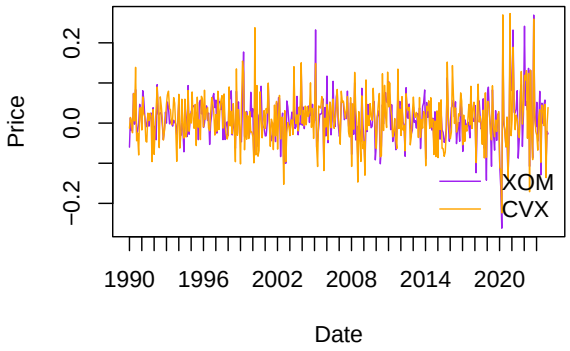


Figure 2:Return from XOM and CVX



	Statistic	PRICE_XOM	PRICE_CVX	RET_XOM	RET_CVX
1	Average	55.98884191	71.3864142	0.009579145	0.01044508
2	Standard Deviation	28.93604864	41.4509165	0.057897093	0.06359844
3	Skewness	0.01295788	0.4476445	0.378096481	0.37768013
4	Kurtosis	1.74132200	2.2410738	6.543803208	5.09982531

From figure 1, we can observe that the since both the companies belong to the same industry, major shocks affect them both the same way. We can see significant drops during the Dot-Com Bubble Burst, Global Financial Crisis, the oil price crash (2014-2016) and the Covid-19 pandemic. However, there have been certain upward movements owing to certain international events and certain OPEC agreements. From figure 1, figure 2 and the table, we can observe that the prices and returns of Chevron (CVX) are more volatile than those of Exxon Mobil (XON) by simply looking at the standard deviation.

Figure 3:Histogram of XOM and CVX Daily Retu

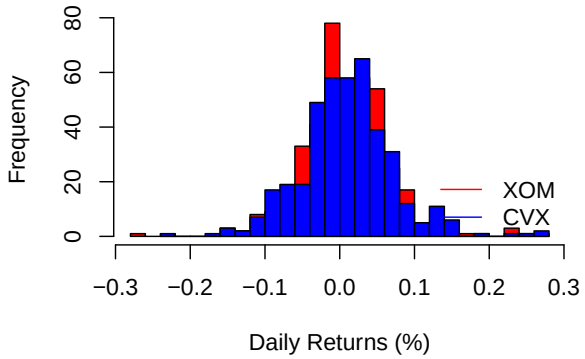
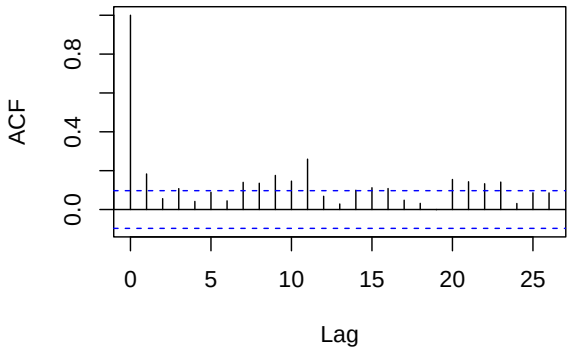


Figure 4: Autocorrelation of XOM's squared retu



From the table, figure 2 and 3, we can see that while the prices of both the stocks have thinner tails compared to the normal distribution, their returns have a kurtosis of greater than 3 indicating their fatter tails and more frequent extreme price changes. They are also positively skewed indicating more instances of higher returns. Exxon has a greater skewness and kurtosis indicating that while the returns maybe less volatile, there is a higher possibility of getting high returns that can often be extremely high (outliers).

Figure 5: 30 −Month Rolling Correlation Between CVX and XOM

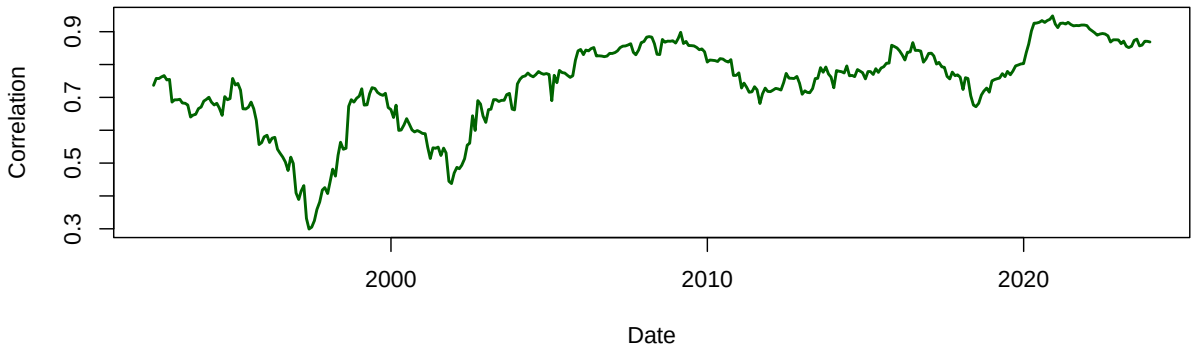


Figure 5 shows how the correlation between the two stocks have changed over time showing non-linear dependence between the returns of two stocks. Ever since Covid-19 they have been almost perfectly correlated. This implies that if a risk averse investor would like to diversify, they would only invest in one of the two stocks. However, from figure 4, we can infer that Exxon's returns are highly auto-correlated (LB test statistic: 32.296, CV: 31.41) and they are also less volatile. This means the returns are only expected to keep increasing in the future with some stability. This makes it a perfect stock to invest in the long term or one can take a long position on this stock. Chevron on the other hand with increased volatility and less or no autocorrelation is suitable for day trading. For a risk loving person, Exxon's increasing returns momentum combined with its high correlation with Chevron, makes it profitable to invest in both considering their high returns.