Mathematical Trading Strategies

Assignment 2

Description: Firstly NaN values have been removed from the dataframe and the daily range represented by ATR is calculated. Also daily return is calculated for each index. On checking for correlation coefficient between Closing value of both indexes which is found to be very near to 1 which implies strong linear relationship. Then on shifting the closing value of NASDAQ by 20 days it is found that the value of correlation coefficient increases. Thus it implies that NASDAQ leads and NSE lags. Then buy sell signals are generated for NASDAQ with each of the strategies. With the help of these buy sell signals the required metrics are calculated and thus parameters of the strategies such as average over how many days is to be taken is optimized to generate maximum returns. The obtained parameters are selected to calculate the metrics on NSE as well. The metrics obtained for NSE are:-

	MACD	Bollinger Bands	Keltner Channels
Cumulative returns	198.3227636011096%	123.80716585571622%	111.839994840299%
Sharpe Ratio	0.9079364920518446	0.4647968136868895	0.5237372834699371
Max Drawdown	-34.60925610603369%	-37.627037683360584%	-37.627037683360584%