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MidTerm Project (Dynamic Delta Hedging Strategy)

The Delta Hedging Portfolio outcomes for total wealth without and with the hedging error signifies a lot of important conclusions. As can be seen from the csv that any given random date, we need to consider the possibilities that the day can be either a saturday, sunday and not included in the csv given to us.

To overcome this problem, what I have done is compared the date to the date vector in the given expiration date vector extracted from the csv file and then compared for non matching values and reduced the days by 1 and 0. Offshooting errors of month ends and friday saturday and february 28th have not been considered given the market policies and holidays in between. The assumption doesn't affect the details much as the data given to us is for all the possible and feasible business working days of the year.

The cumulative hedging error for the real world data is far more when compared to the simulated data. Reason being lot of macroeconomic factors, driving industrial risk and the firm specific risk playing an important part in this deviations.

The code uses some custom functions that are not implementable in versions lower than C++11. For eg. String to Double and Double conversions. Apart there is OOP used for standard calculations, lot of memory leakage has been avoided by appropriately taking care of pointers and then not letting them globally poison the whole variables in public.

Monkey patching is done so as to be platform compatible with C++ 11 except for the to_String function which runs in C++11 compilers and Boost Lexical Converters, while having done the double to String function customised to do the same.

In Conclusion, the delta hedging portfolio can be seen in the hedging.csv for the simulated data and result.csv for real world data.
