QMIFin HW 1

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This homework is partly recap from last year, but has a few open-ended questions/things we haven't covered :)

Problem 1 What's the difference between a future and an option? What parameters are important for pricing an option? What is the classical option pricing model?

Problem 2 Using the model identified in P1, price a European Call option on AMGN with strike price $260, expiry in exactly 1 year. Pull daily price info for the last 6 months here, and use the annualized 5-year Treasury rate as the risk free rate here. Please show all work (feel free to check the option chain here as a sanity check)

Problem 3 Explain these concepts in 4-5 sentences: CAL, efficient frontier, minimum variance portfolio, indifference curve, optimal complete portfolio. (Feel free to include graphics)

Problem 4 Considering your answers to P1-P3, how well do you feel market behavior fits our established theoretical framework? Give an empirical example in support of your answer.

Problem 5 What's a KPI you feel has gained importance since February 2020 (any answer related to Google Trends is not allowed)? Is this KPI industry-specific or general? Why do you think this KPI was previously not as important? Ideas to capitalize on this?

Problem 6 Identify and describe specific quantitative factors that can be used to measure the following: equity liquidity, equity volatility, balance sheet health, debt quality, short-seller involvement, and momentum. Please include relevant equations and links – try to be as specific as possible and understand there are multiple right answers

Problem 7 This past April, WTI Futures settled in Cushing, OK traded at -$37 per barrel. Explain what this implied.