Introduction

A general assumption in finance is that stock returns are normally distributed (...). However, various authors have shown that this assumption does not hold in practice: stock returns are not normally distributed (...). For example, Theodossiou [1] mentions that "empirical distributions of log-returns of several financial assets exhibit strong higher-order moment dependencies which exist mainly in daily and weekly log-returns and prevent monthly, bimonthly and quarterly log-returns from obeying the normality law implied by the central limit theorem. As a consequence, price changes do not follow the geometric Brownian motion." So in reality, stock returns exhibit fat-tails and peakedness (...), these are some of the so-called stylized facts of returns.

Additionally a point of interest is the predictability of stock prices. Fama [2] explains that the question in academic and business circles is: "To what extent can the past history of a common stock's price be used to make meaningful predictions concerning the future price of the stock?". There are two viewpoints towards the predictability of stock prices. Firstly, some argue that stock prices are unpredictable or very difficult to predict by its past returns (i.e. have very little serial correlation) because they simply follow a Random Walk process (...). On the other hand, Lo & MacKinlay mention that "financial markets *are* predictable to some extent but far from being a symptom of inefficiency or irrationality, predictability is the oil that lubricates the gears of capitalism". Furthermore, there is also no real robust evidence for the predictability of returns themselves, let alone be out-of-sample [3]. This makes it difficult for corporations to manage market risk, i.e. the variability of stock prices.

Risk in general can be defined as the volatility of unexpected outcomes [4]. The measure Value at Risk (VaR), developed in response to the financial disaster events

of the early 1990s, has been very important in the financial world. Corporations have to manage their risks and thereby include a future risk measurement.

References

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[3] Ivo Welch and Amit Goyal. "A Comprehensive Look at The Empirical Performance of Equity Premium Prediction". In: *Review of Financial Studies* 21.4 (July 2008), pp. 1455–1508. URL: https://academic.oup.com/rfs/article-lookup/doi/10.1093/rfs/hhm014.

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