

# Tesla and Unilever

## Introduction

This document analyses Tesla and Unilever, examining their stock prices, returns, and key statistics to provide an informed recommendation. Visualisations will illustrate trends and major events affecting each stock. Data is sourced from WRDS's CRSP Daily Stock database, covering the period from the January 2013 to the December 2023. These stocks were chosen for their contrasting industries and risk-return profiles.

Tesla, founded in 2003, is a leading American electric vehicle and clean energy company, ranking among the world's highest in market capitalization. Unilever, established in 1929, is a British consumer goods giant known for its diverse product portfolio, including its status as the world's largest soap producer.

## Historical Price and Return Trends for Tesla and Unilever (2013–2023)

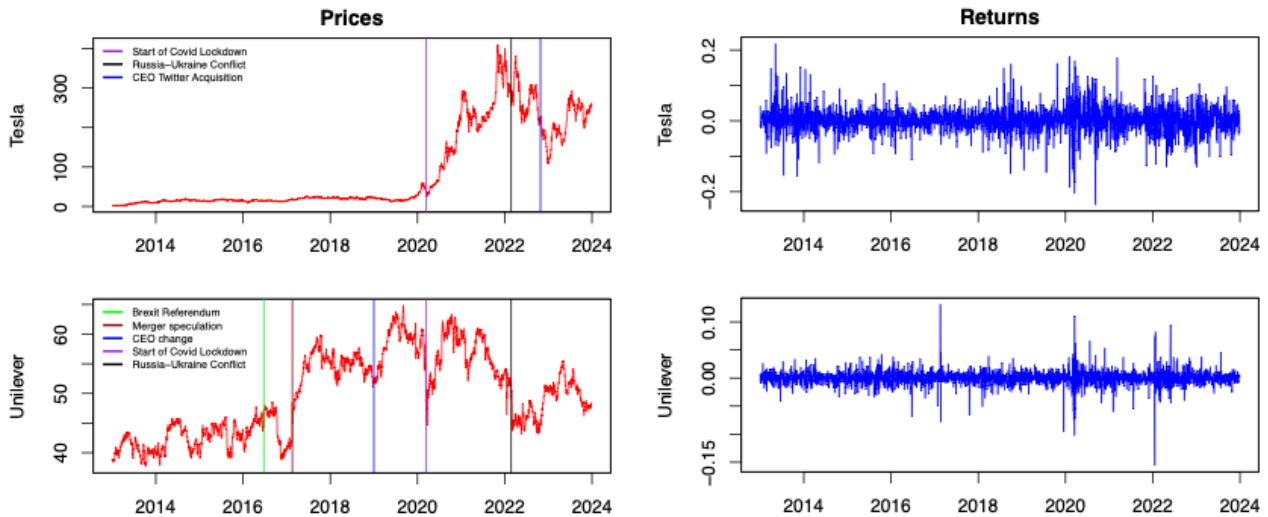


Table 1: Return sample stats (in %)

Asset	mean	sd	min	max
UL	0.021	1.308	-15.596	13.103
TSLA	0.170	3.569	-23.652	21.836

## Analysis of Tesla

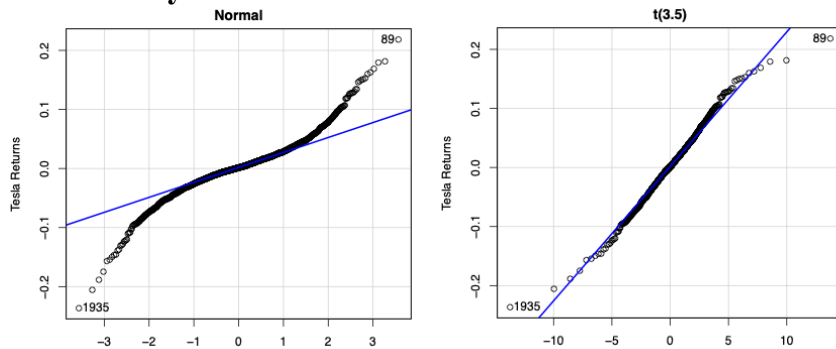


Table 2: Summary Statistics for Tesla Returns

Metric	Tesla
Skewness	-0.0091163
Kurtosis	7.7547099
Jarque-Bera Statistic	2607.4096945
Jarque-Bera p-value	0.0000000

Tesla's returns exhibit fat tails, aligning with a Student's t-distribution. Summary statistics show near-zero skewness, high kurtosis (7.75), and a Jarque-Bera test rejecting normality.

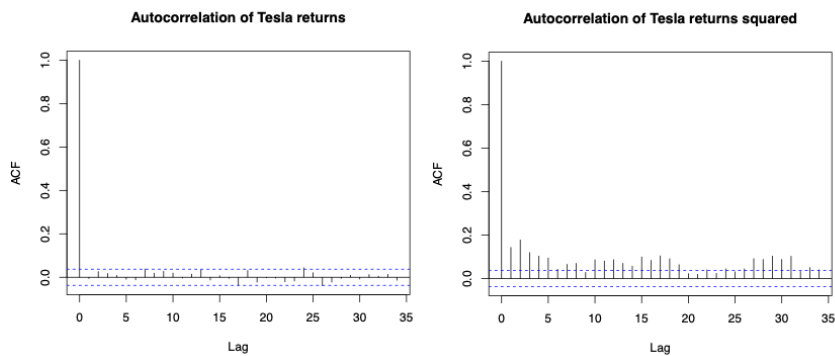


Table 3: Ljung-Box Test Results for Tesla Returns

Metric	Tesla
Ljung-Box Statistic (Returns)	0.0982806
Ljung-Box p-value (Returns)	0.7539028
Ljung-Box Statistic (Returns Squared)	57.2347005
Ljung-Box p-value (Returns Squared)	0.0000000

Tesla's returns show no significant autocorrelation for returns ( $p = 0.75$ ), but the Ljung-Box test for squared returns ( $p = 0.000$ ) is significant, indicating evidence for predictive volatility.

## Analysis of Unilever

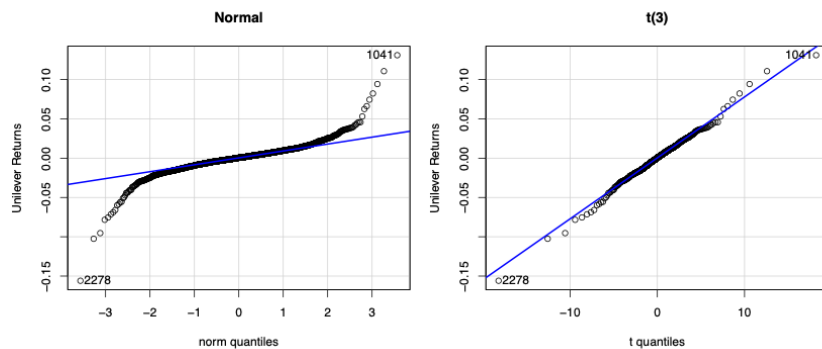


Table 4: Summary Statistics for Unilever Returns

Metric	unilever
Skewness	-0.3965358
Kurtosis	22.3392079
Jarque-Bera Statistic	43207.7791738
Jarque-Bera p-value	0.0000000

Unilever's returns exhibit fat tails, aligning with a Student's t-distribution. Summary statistics show high kurtosis (22.34), and a Jarque-Bera test rejecting normality.

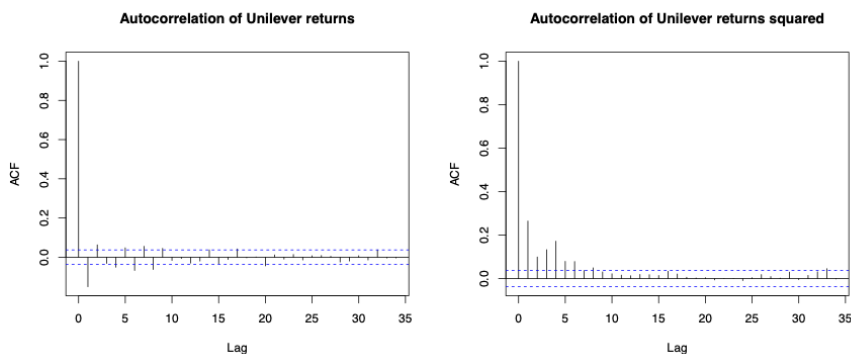


Table 5: Ljung-Box Test Results for Unilever Returns

Metric	Unilever
Ljung-Box Statistic (Returns)	62.91664
Ljung-Box p-value (Returns)	0.00000
Ljung-Box Statistic (Returns Squared)	194.60722
Ljung-Box p-value (Returns Squared)	0.00000

Unilever's returns and squared returns show significant autocorrelation ( $p = 0$ ), indicating evidence for predictability in mean and volatility.

## Conclusion

Tesla's prices exhibit high variability and sensitivity to market events, suitable for high risk, opportunistic strategies. Unilever, by contrast, shows consistent price stability and resilience to shocks, positioning it as a dependable choice for risk-averse, long-term investments. Statistical tests reveals that both stocks display fat tails and volatility clustering; however, while Tesla's returns exhibit no autocorrelation, Unilever's predictable patterns enhance its suitability for sustained investment approaches.

## Recommendation:

- High growth, high risk: Tesla suits speculative, short-term strategies aiming for significant gains
- Stability, consistency: Unilever is well-suited for conservative, long-term portfolios seeking reliability and lower risk.