Predicting Market Trends: Effects of GDP and PMI on Changes in Stock Closing Prices

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Predicting Market Trends:
Effects of GDP and PMI on Changes in Stock Closing Prices
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Introduction
The Purchasing Managers’ Index (PMI) is a diffusion index indicating the direction of economic trends in the manufacturing and services sector. It is weighted by each industry’s contribution to U.S. GDP. An index level greater than 50 percent suggests expansion and a level less than 50 indicates contraction.

The purpose of this research was to analyze the impact of the Purchasing Managers’ Index and Gross Domestic Product on three major stock indices to determine if current business conditions can predict future investment returns.

Method
Monthly data for PMI and each stock index and quarterly data for GDP were compiled from August 2000 through August 2019. R was utilized to graph each set of data. Each stock index was plotted against GDP, with PMI as a third variable.

The boxplots below demonstrate that positive PMI changes produce greater and more positive changes in stock closing prices.

Conclusion
There is a strong positive linear correlation between the three major U.S. indices due to substantial overlap among stocks.

PMI is likely a good, though not perfect, indicator of current economic condition. More investigation is needed to determine if and how changes in PMI cause stock market closing price fluctuations.

Data Sources
Nasdaq, Dow, and S&P Historical Closing Price Data: https://finance.yahoo.com
Monthly PMI Historical Data: https://www.quandl.com
Quarterly GDP Historical Data: https://fred.stlouisfed.org