

## **CASE: MONEY SUPPLY AND STOCK PRICES - FRIENDS OR FOES?**

In the price evaluation of stocks, various aspects may be taken into account. The two main that may be considered are speculations and real value of expected future gains from owning a given stock. The speculative approach usually affects the process in the short-term, while the real potential of the firm(s) should affect the stock prices in the mid- and long-term. In the context of the mid- and long-term stock value, the price may be perceived as determined by the present value of the future cash flows. The present value of the future cash flows, in turn, is calculated by discounting the future cash flows at a discount rate. One of the crucial elements that affect the discount rate and hence the present value of cash flows, is money supply (Maskay, 2007).

What is interesting, in the leading economic theories there is no common agreement on how money supply affects stock markets. The competing theories to be examined here are the ones developed by Keynesian economists and real activity theorists. Keynesian economists argue that there is a negative relationship between stock prices and money supply, whereas real activity theorists argue that the respective relationship is positive.

Keynesian economists claim that a change in money supply will have an impact on stock prices only if the switch in money supply alters investors' expectations about future monetary policy. According to this perspective, a positive money supply shock will lead the market to anticipate somehow restrictive monetary policy in the future. Investors bid for funds in expectation of tightening money supply in the future, which will drive up the current rate of interest. As the interest rate goes up, the discount rates increase as well and the present value of future earnings drops. Then, stock prices decline. Furthermore, Keynesian economists argue that economic activity diminishes as a result of increases of interest rates, which further lowers stock prices (Maskay, 2007; Sellin, 2001).

Real activity economists, in turn, believe that a change in money supply, assuming accommodative monetary policy, provides information on money demand. In other words, they argue that an increase in money supply means that money demand is increasing in anticipation of increases in economic activity. Higher economic activity implies higher expected profitability, which causes stock prices to rise. Hence, real activity theorists argue that there is a positive relationship between money supply and stock prices (Sellin, 2001).

Regardless of which theory is being considered, it is assumed that there is a relationship between money supply and stock prices. The question arises how to model this link? What is even more interesting in taking advantage of knowing this phenomenon is whether we are able to predict the value of the stock index by taking into consideration changes of money supply?

Naturally, money supply is not the only predictor that may affect stock prices. The following predictors may be also considered: past prices, technical indicators, macroeconomic announcements and many others.

Moreover, special actions undertaken by governments may have influence on the stock prices. In the USA, in response to the financial crisis of 2008 and the subsequent global economic recession, the Federal Reserve (Fed) undertook an aggressive policy intended to pump liquidity into a fragile U.S. economy (Olsen, 2014). The policy was referred to as "quantitative easing." To date, there have been a few programs of quantitative easing policy, in example for the USA: quantitative easing 1 (QE1), quantitative easing 2 (QE2), the maturity extension program (or "Operation Twist"), quantitative easing 3 (QE3) and quantitative easing 4 (QE4). The obvious expectation of the Fed's policy was that with more liquidity injected into the economy, asset prices would inflate. A question that arises here is: did they manage to?

With all that in mind, we would like to find an answer for a challenging question:

**Is it true that money (supply) makes money (increase of S&P500 index)?**

To be more precise we have prepared the following set of research questions, with division to main questions (obligatory) and additional questions (nice to consider).

Main questions:

1. Is M2 money supply a useful predictor of stock prices (M2 supply vs S&P500)?
2. At which frequency (weekly or monthly) the relationship is stronger?
3. Which other predictors, except M2, play an important role in a predictive model?

Additional questions:

4. How to predict not only the expected value of S&P, but also the distribution/interval of the expected S&P?
5. Did announced quantitative easing programmes affect S&P500 prices?
6. Are daily prices/returns of S&P500 index influenced by M2 supply changes?
7. What effect would have a money supply shock (USD 20 billion) on the S&P index?

We have prepared for you a dataset that may be used for solving the case. In the dataset, you may find the time series of S&P 500 (weekly and monthly) and M2 money supply in the US (weekly and monthly). The datasets contain the main information needed for solving the case.. Do you need more? Only the Internet is the limit.

References

- Maskay, B. (2007). Analyzing the Effect of Change in Money Supply on Stock Prices. The Park Place Economist, 15, 72-97.
- Sellin, P. (2001). Monetary Policy and the Stock Market: Theory and Empirical Evidence. Journal of Economic Surveys, 15, 491-541, <http://dx.doi.org/10.1111/1467-6419.00147>
- Olsen, J. L. (2014). The Impact of Quantitative Easing on Equity Prices. Journal of Financial Planning 27 (5): 52–60.

Data files

- M2NS.csv - monthly M2 (Jan 1959 to Feb 2023), Billions of Dollars, Not Seasonally Adjusted, source: <https://fred.stlouisfed.org/series/M2NS>
- M2SL.csv - monthly M2 (Jan 1959 to Feb 2023), Billions of Dollars, Seasonally Adjusted, source: <https://fred.stlouisfed.org/series/M2SL>
- WM2NS.csv - Weekly M2 (1980-11-03 to 2023-03-06, Ending Monday), Billions of Dollars, Not Seasonally Adjusted, source: <https://fred.stlouisfed.org/series/WM2NS>
- Sp500\_daily.csv, daily quotations of S&P 500 index (2000-01-03 to 2023-04-11, OHLCV), source: <https://finance.yahoo.com/quote/%5EGSPC/history>
- Sp500\_monthly.csv, monthly quotations of S&P 500 index (Jan 2000 to April 2023, OHLCV), source: <https://finance.yahoo.com/quote/%5EGSPC/history>

Suggested additional data sources

- Yahoo finance: <https://finance.yahoo.com/>
- FRED Economic Data: <https://fred.stlouisfed.org/>