

QUANTITATIVE EASING AND THE U.S. STOCK MARKET PRICING: THE AFTERMATH

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Today, countries of the world are still trying to cope not only with the consequences of the crisis caused by the 2020 coronavirus pandemic, but also with the consequences of their decisions, including those regarding monetary policy. Monetary policy defined as a policy adopted by the monetary authorities of sovereign countries, which aims to achieve stability of economic growth, national currency, and inflation rate [1]. Monetary policy is usually conducted via specific methods, such as the money supply regulation through open-market operations, establishing and changing bank reserve requirements, interest rate changing, establishing credit policy, re-lending, and re-discount. Simultaneously, monetary policy actions impact the share prices at the stock market as well. In [2], authors found a long-term relationship between money supply and share index DJIA, confirming the conclusion about the influence of changes in money supply on change of the stock index. Changes in interest rate also show impact on stock market prices, according to [3].

The aforementioned methods tend to be called conventional, as some new, unconventional methods arose in response to new challenges that conventional methods cannot handle. Among these methods are collateral adjustment, negative interest rates, forward guidance, and Quantitative Easing (QE).

QE was first introduced in Japan in 2001 in response to unprecedented recession and deflation for more than 10 years in 1990s, when interbank interest rates were reduced to almost zero, but it was not enough to end deflation [4]. In quantitative easing the central bank purchases government bonds and other financial instruments to increase the domestic money supply and spur economic activity. Bernanke [5] argues that purchasing on central banks' balance a large quantity of a certain asset will influence its price, and through arbitrage transactions, will impact yield of other assets, for example bonds, and if their yield declines, the overall economy can benefit. In the case of Japan, the Bank of Japan during 2001-2006 intervened in open markets and purchased not only treasury securities, but also equities and asset-backed securities. Further studies and investigations concluded that while no real growth was experienced due to QE, and stock prices actually decreased during QE, still it increased future stability on financial markets by adding liquidity to the system [6], [7].

Several years later, QE was applied in the U.S. for almost the same reason. Facing in 2008 financial crisis caused by mispricing in the massive credit default swaps market [8], central bank already lowered overnight interest rates close to zero, hitting the Zero Lower Bound (ZLB), and to avoid liquidity trap (when public will rather save money than spend), central bank decided to take unconventional measures to help the economy in avoiding scenario of liquidity trap, since the conventional monetary method of lowering the interest rate turned out to be ineffective at this point [9]. These

unconventional measures were quantitative easing programs known as Q1, Q2 and Q3. Q1 was implemented during December 2008 to March 2010; Q2 took place between November 2010 and June 2011 and Q3 started in September 2012 and ended in late 2014. The federal reserve balance sheet has increased from 0.89 trillion USD before the crisis to 4.5 trillion USD in 2015 (Fig. 1).

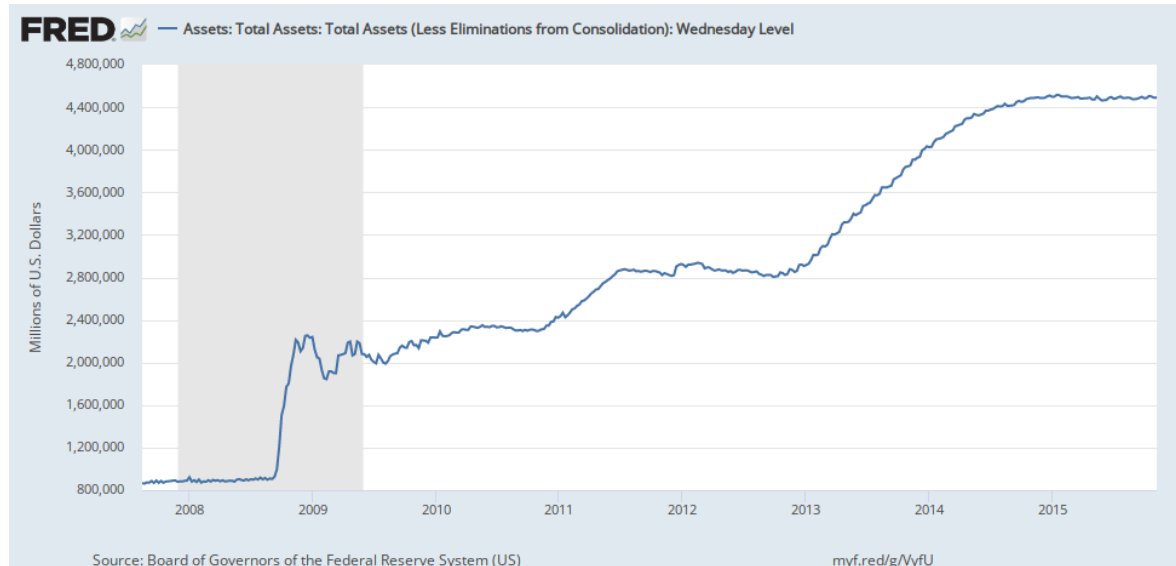


Figure 1. Total assets at federal reserve balance sheet during Q1, Q2 and Q3.
Source: Federal Reserve Bank of St. Louis, fred.stlouisfed.org.

In contrast with Japan’s case, U.S. stock market responds positively to QE policy, and several studies show positive long run relationship between the money supply and stock indices in the U.S. for the period 2008-2014 [9]. However, limited research has been done regarding the aftermath of QE, in particular QT (quantitative tightening), in relation to stock market, comparing to direct QE impact. It was observed that the S&P500 stock index had annual performance close to zero a one year after federal reserve balance stopped to growth (2015-2016), yet of course stock index impacted by multiple factors, however the reverse impact of QE cannot be rejected. Ben Honig et al [10] suggested that the prices of financial assets was driven up by available liquidity due to QE that shifted investment incentives towards financial speculation instead of capital projects. This means a concern that removing this liquidity will deflate financial asset prices. Indeed, from Jan 2018 to Sep 2019, fed balance sheet decreased from 4.44 trillion USD to 3.76 trillion USD, and during this period, the S&P 500 index demonstrated high volatility and low return, while before reducing balance it showed good performance with high return. It might be caused by multiple reasons, but again, the impact is obvious.

It might remain not a big concern, but in 2020 the world economy faces unprecedented risks due to the SARS-CoV-2 pandemic. This forced central banks to take unprecedented measures to stabilize the economies. Particularly, in the U.S., GDP collapsed at an annual rate of over 30% in the second quarter of 2020, and unemployment rate reached almost 15% in April of 2020 [11]. Therefore, in March 2020, the Fed officials began taking measures to address the economic problems caused by the SARS-CoV-2 pandemic and corresponding restrictions on activity.

These measures are related to monetary policy and emergency lending policy. In regard to monetary policy, the Fed lowered interest rates, expanded repurchase operations, engaged in QE, relaxed regulatory constraints, and revised their policy strategy [12]. Unlike the response to the financial crisis 2008, in response to the pandemic crisis the Fed took steps, in addition, aiming to support key financial markets and to help them run smoothly. The Fed quickly ramped up its purchases of Treasury securities and bought around 1.7 trillion USD worth between mid-March and the end of June [13]. Ben Honig et al's concern becomes more real in this case, as we observe direct liquidity injection to the stock market. In this case, not surprising that after a fast drop, the S&P500 index start its quickly recover after large-scale asset purchasing was began by Fed (Fig. 2).

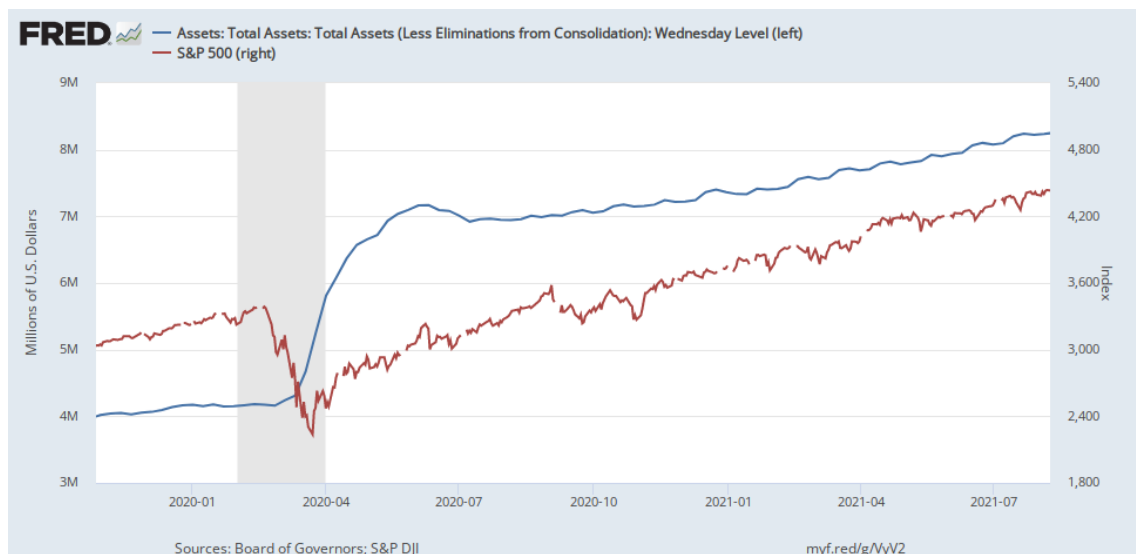


Figure 2. Total assets at federal reserve balance sheet and S&P500 index during pandemic.

Source: Federal Reserve Bank of St. Louis, fred.stlouisfed.org.

The causes of such a positive response of stock market on this QE could be that the amount of security purchases by fed are vastly exceeded the purchases during the previous QE and happened in a much shorter time frame, thus being more aggressive, and considering the state of the economy that was much better in contrast to the global financial crisis [14].

It is well known that the flip side of the quantitative easing coin is quantitative tightening (QT). QT simply means the process of fed's balance sheet reduction. It's the inevitable aftermath of QE application. When the excess liquidity leads to raising of inflation rate above the fed's target, this excess liquidity should be removed from the financial market, not only by interest rate hiking, but also by selling securities from the balance sheet, namely QT. As of December 2021, the inflation rate in the U.S. was as high as 7.0% [15], which is much higher than fed' goal at 2%. Therefore, at the joint meeting of the Federal Open Market Committee and the Board of Governors of the Federal Reserve System on December 14-15, 2021, majority of officials firstly agreed that shrinking the U.S. central bank's overall asset holdings as well as raising interest rates sooner than expected to fight inflation is needed [16]. Needless to say, soon after

that the S&P 500 index reached its all-time high and, as it now clearly seen, switched to bearish market even before the QT actually started and even while the effective federal funds rate remained close to zero before March 2022. As of today, the S&P 500 index demonstrates 21% drawdown from its all-time high, roughly 11% higher than pre-pandemic high. The situation is even worse for NASDAQ 100 index, which is 34% below its all-time high. That's the aftermath of QE, that may not bring the expected effect but adverse effects.

Future actions in monetary policy should be done with consideration of long-term consequences of adopted measures. The future research on this topic should include further investigation of QT impact on stock market and overall financial system, as well as possible QE modernization to make incentives more accurate so that they will bring effect as expected without adverse effects.

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