A Reserve-Focused Assessment of Quantitative Easing and Bank Balance Sheets

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Non-Technical Summary

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The central bank of the United States, called the Federal Reserve or "the Fed," influences inflation primarily by increasing or decreasing the interest rate at which banks trade reserves with each other, called the fed funds rate. During the financial crisis, the fed funds rate became constrained by zero while the economy still needed a boost. So, the Fed introduced quantitative easing (QE) to provide this extra stimulus. In QE, the Fed attempts to drive down other interest rates in the economy by purchasing assets with long maturities. The Fed creates bank reserves to finance these asset purchases. Reserves are essentially a bank's checking account at the Fed. From 2008 to 2014 and again from 2020 to 2022, the Fed purchased large quantities of assets. Thus, it also created vast amounts of reserves. Since 2008, researchers have debated the effectiveness and consequences of such "unconventional" policy.

In my paper, I ask how banks respond to this reserves creation. I find that banks decrease their loan holdings in response to an unexpected increase in reserves. They replace their loan holdings mostly with the newly created reserves themselves, but also U.S. Treasury bonds and mortgage-backed securities. It is important that the increase in reserves is *unexpected*. If expected, the response from banks is difficult to detect in the data. I also find that real GDP and prices of goods and services rise beginning one year after the unexpected increase in reserves, as is intended with QE.

I do not view my research question as novel. Other papers ask the same question, though far fewer papers than those that investigate the effect of QE through interest rates. I contribute to the literature both in the model I use and by uncovering the mechanism driving my results. The paper most similar to mine uses a static model (i.e. without variation across time) and analyzes each year of QE in isolation. Instead, I use a dynamic model in which the policy conducted by the Fed can respond to past observations of the macroeconomy and bank balance sheets (and vice versa). This is a more realistic construction of the macroeconomy.

I also reveal a story that is consistent with my baseline findings; it is likely that banks decrease loan holdings because of a lack of demand for loans, not because they are unwilling to hold loans. After all, the Fed initiates QE during recessions when consumer confidence is typically low. I actually find that banks are *willing* to issue new loans because they can easily sell them to firms that will package them together for the issuance of tradable securities. This is where mortgage-backed securities come from! Banks appear happy to hold liquid assets (the reserves and relatively safe assets) while they wait for lending opportunities.

My paper is important outside academic research because I discuss novel considerations for Fed policy. My results suggest that the Fed should watch loan demand when anticipating how QE will change lending practices. For instance, if QE were conducted when loan demand is high, then the Fed might instead expect lending to increase and subsequently also overall spending in the economy. Lastly, the decrease in loan holdings appears counter to the Fed's goal to stimulate the economy. However, I find that this is simply a feature of the financial system in the U.S., not an unintended decline in credit access from the influx of reserves.