Interest on Reserves and the Federal Reserve's Balance Sheet

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Abstract. What are the implications for monetary policy of a central bank's payment of interest on reserves? Is the demand for reserves infinitely elastic if interest is paid at the same rate as is available on government securities, or in the United States, at the Federal Funds rate? In general, the answer is no. Reserves and government securities are perfect substitutes when a government central bank pays interest at the same rate as the rate on government securities. This implies that the Federal Reserve cannot ignore the size of its balance sheet in the aftermath of the financial crisis of 2008.

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1. Introduction

On October 9, 2008, the Federal Reserve System began paying interest on reserves. With this action, the Federal Reserve joined an increasing list of central banks paying interest on reserves. While paying interest had been authorized to be permitted in following years, the financial crisis and a desire to increase reserves was the stated reason for moving up the date. The initial rates were set at the average Fed Funds rate minus ten basis points for required reserves and at the lowest Fed Funds rate minus 75 basis points for excess reserves. After a couple of intermediate adjustments in the rule for determining the interest rate to be paid on reserves, the rates on both required and excess reserves now equal the upper end of the range for the target Fed Funds rate announced by the Federal Open Market Committee. At the same time as this change, the monetary base doubled from September 2008 to the end of the year (Gavin 2009).

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These changes in reserves and the interest rate on reserves are coincident with the financial crisis in September and October 2008. This makes it very difficult to tell how much of the increase in the monetary base and reserves is due to banks' concerns about lending to other banks through the Fed Funds market and how much is due to reserves being a more attractive asset than previously.

The effects of paying interest on reserves at the Fed Funds rate have been analyzed by Goodfriend (2002) and Keister, Martin and McAndrews (2008). They suggest that monetary policy now is divorced from money. Goodfriend asserts that the demand for reserves is infinitely elastic, relying on his analysis of the implications of the zero bound on interest rates. Keister et al. elaborate on this argument.

This argument can be interpreted as meaning that the dramatic increase in the Federal Reserve's balance sheet from August 2007 to this writing (May 2009) can be held indefinitely, whether or not Goodfriend and Keister et al. meant to suggest it. In the context of current policy discussions, this is an important argument because it implies that there is no reason to be concerned about the Federal Reserve unwinding the substantial increase in its balance sheet.

This paper explores whether it is plausible to treat the demand for reserves as infinitely elastic, given an interest rate on reserves that is the same as the Fed Funds rate. First, it explores this question in a simple general-equilibrium analysis with banks and deposits. This economy is deterministic, which means that the banks' assets are risk free. In effect, the banks' interest-earning assets are risk free, which can be considered to be government securities. This analysis shows that the demand for reserves can be treated as infinitely elastic up to the value of the banks' assets.

Another, and a more generally informative, way of stating this conclusion is that reserves and government securities are perfect substitutes to a bank when reserves pay interest at the same rate as government securities. As shown below, statements beyond this conclusion rely on a liquidity trap which makes the demand for deposits infinitely elastic. While such a state is possible when only deposits and government securities are held by households, it would not hold, for example, if the model had currency paying zero interest with a determinate demand for this currency relative to deposits.

It is important to know how much of this conclusion holds up when risky assets are introduced into the economy and banks' portfolio. Rather than attempt what would be a very complex general-equilibrium analysis, this paper examines portfolio choice by a bank when it chooses between risky assets and risk-free government securities and reserves. As before, reserves and government securities are risk free. For a risk-averse bank, there is a determinate demand for risk-free assets relative to risky assets. It continues to be the case that risk-free government securities are a perfect substitute for risk-free reserves.

The final section pulls together some information on the magnitudes of banks' holdings of reserves and government securities. This provides some perspective on the question of how much reserves banks are willing to hold.