



[Achieving Price Stability by Manipulating the Central Bank's Payment on Reserves](#)

CFM-DP2016-34

Robert E. Hall^{3,5,6} and Ricardo Reis^{1,2,4,5}

¹Centre For Economic Policy Research, ²Centre For Macroeconomics, ³Hoover Institution, ⁴London School of Economics and Political Science, ⁵National Bureau of Economics Research and ⁶Stanford University

We focus on the process of monetary policy---the way the central bank controls interest rates to stabilize the economy and achieve low and stable inflation. Today, all major central banks pay or collect interest on reserves, and stand ready to use the interest rate as an instrument of monetary policy. Because the reserve rate controls other short rates, a central bank could follow the prevailing central-banking paradigm involving nominal interest rate rules, as in the extensive literature on the Taylor rule. But that literature has some disturbing elements---in particular, it raises the possibility of indeterminate equilibrium with a Taylor rule. This paper considers a new process for remunerating reserves, and concludes that a properly constructed monetary policy process robustly pins the price level uniquely to a target, free from the possibility of indeterminacy.

The essential idea is to index reserves to the market interest rate, the price level, and the target price level in a way that creates a contractionary financial force if the price level is above the target and an expansionary force if below. Our proposal process combines two simple principles:

- If the central bank ordains that the monetary unit is an asset, then this asset's purchasing power in terms of output is the inverse of the price level $1/p$.
- In an economy with real interest rate r , if a creditworthy entity issues an asset that pays off $1+r$ units of output next period, the current market price in terms of output is one.

Reserves are such an asset: they are the unit of account in the economy and the central bank remunerates them. The inevitable conclusion is that if the payment on reserves is $1+r$ units next period, the price level today can only be 1. Thus, the central bank has achieved its price level target with a monetary policy process that uses the payment on reserves as its instrument. The process depends only on observable financial variables and pins down the price level to its target uniquely and globally.

This paper shows that this conclusion requires only a minimal model that involves only a valuation operator and a no-arbitrage condition for reserves. This setup is at the heart of the vast majority of more involved models in modern monetary and financial economics. We use it to show three equivalent ways of formulating the payment on reserves process, and prove that they deliver a globally unique price level. Further, we show that mis-measurement of targets and economic



conditions does not affect the determinacy of the price level, and that the financial stability of the central banks is not in danger. Moreover, we show that our conclusions follow through in an economy with firms that choose prices subject to nominal rigidities, if reserves are a special asset in the sense of providing liquidity services, and if financial frictions that break the no-arbitrage relation between reserves and other short-term government liabilities. The process accommodates liquidity services from reserves, segmented financial markets where only some institutions can hold reserves, and nominal rigidities.

Our payment-on-reserves policy process does not require terminal conditions like Taylor rules, exogenous fiscal surpluses like the fiscal theory of the price level, liquidity preference as in quantity theories, or local approximations as in new Keynesian models. It has its roots in a suggestion by Irving Fisher. We believe it would be easy to implement. The overall conclusion is twofold. Having large amounts of outstanding reserves and paying interest on them makes price-level stabilization easier. And a payment on reserves process provides an effective solution to the central problem of keeping the price level or inflation on target.