Global Finance Journal xxx (2014) xxx–xxx

Contents lists available at ScienceDirect
Global Finance Journal
journal homepage: www.elsevier.com/locate/gfj

Quantitative easing in an open economy—Not a liquidity but a reserve trap

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ARTICLE INFO

Available online xxxx

JEL classification:
E58
F41

Keywords:
Quantitative easing
Credit expansion
Macroeconomics
Export-led

ABSTRACT

Expansionary monetary policy is ineffective in a liquidity trap. In another case, which we call a "reserve trap," money supply increase is trapped in bank reserves; there is no credit expansion through the banking system. In such case, quantitative easing (QE) will not boost credit to the real sector and revitalize the economy. To analyze a reserve trap, we modify the open economy model to include multiple interest rates. Trade is included since exports can be financed externally even during domestic credit constriction. We show the conditions under which QE can lead to currency depreciation and trigger an export-led recovery.

1. Introduction

To prevent deflation caused by a financial crisis or to revive economic growth,[1] central banks can use interest rate policy to promote lending by cutting rates to raise the level of economic activity. However, sometimes such policy may not be sufficiently effective even when rates are cut to near zero.[2] Then central banks can also pump money directly into the economy to try to increase circulating money supply. Today this is known as quantitative easing (QE). (It may also recall the term "monetizing the debt" that is associated with inflationary periods historically). However, if QE results only in boosting banks reserve balances, and not in expanding bank credit to the real sector, the consequences will be very different from those of conventional credit expansion policy. This in fact is what happened in 2008[3] after the Global Financial

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[1] For example, after the 2008 financial crisis, the consumer price index in the U.S. dropped drastically (see Appendix A Chart 1); and real GDP declined (see Appendix A Chart 2). (Sources: Federal Reserve Bank of St. Louis, 2014).

[2] Liquidity trap can occur when interest rate is near zero.

[3] For instance, Appendix A Charts 3, 4 and 5 show after the 2008 financial crisis, U.S. money stock M1 increased steadily while banks reserve balances rose sharply and bank loans declined. (Sources: Federal Reserve Bank of St. Louis, 2014)

http://dx.doi.org/10.1016/j.gfj.2014.03.004
1044-0283/

Crisis. We call this type of situation a "reserve trap" because the increase in money supply is trapped in banks reserves; there is no credit expansion through the fractional reserve banking process. A reserve trap can occur by central bank design, by bank unwillingness to lend, or by unintended consequences of policies. Since this kind of phenomenon does not involve technological/productivity shocks or credit expansion to the real sector, real business cycle (RBC) analysis may not be an appropriate tool. Furthermore, a reserve trap will cause tiered financial markets so that the traditional open macro model with a single composite interest rate will not be adequate. To remedy this, we introduce a modified open economy macro model with multiple interest rates, which we will call the $R_{\text{equil}} - M_{\text{equil}}$ model. This is to distinguish it from the traditional IS-LM model with a single interest rate. Our analysis will reveal the importance of the oft-neglected trade factor in any economic recovery associated with QE. We will show that if QE induces a divergence of various interest rates, domestic currency can depreciate and thus trigger an economic recovery through export growth. In fact, given the possible benefit of such depreciation on competitiveness of domestic industries and export growth, governments might not hesitate to engage in QE to indirectly manage their balance of trade.

Prof. R. Werner introduced the expression "quantity easing" in his article in the Japanese newspaper Nikkei on 2nd September 1995.[4] He was discussing the Bank of Japan (BOJ) policy, and he meant QE to be a policy of "expansion in broad credit creation" and not just increasing banks reserve accounts as practiced by BOJ.

After the 2008 financial crisis, various central banks combined lowering of target reserve rates[5] with QE policy. QE was mostly in the form of injection of reserves to banks which involved central banks purchasing risky assets such as mortgage-backed securities (MBS) and other debts from the banks. In the case of the European Central Bank (ECB), this was in the form of expanding the types of collateral that banks can use for drawing reserves. The banking sector is thus strengthened by having sufficient reserves to shore up its capital base and by unloading risks.[6] All these actions are basically asset swaps between the central banks and their banking sectors. While this has the beneficial effect of stabilizing the banking sector, it does not promote investment necessary for economic growth. In fact, banks' knee-jerk reaction to financial crisis is to shift toward risk aversion and to restrict lending. Some of the monetary policies adopted after the crisis may in fact amplify the unwillingness of banks to lend to businesses.[7]

2. Literature review

Bernanke (1983) found that financial disruptions of the 1930–1933 depression years resulted in higher costs and reduced availability of credit. Bernanke and Gertler (1995, p. 41) highlighted one channel in which an increase in Fed fund rate reduces credit supply:

> Open-market sale by the Fed—which shrinks banks' core deposit base and forces them to rely more on managed liabilities—also increases banks' (relative) cost of funds. An increase in the cost of funds to banks should shift the supply of loans inward, squeezing out bank dependent borrowers and raising the external finance premium.

Theoretically, this type of operation also works in reverse so that when a central bank cuts target reserve rates, the credit supply would increase. A main caveat of this thesis is that the banks' own borrowing cost will decrease along with the central bank target rate. If this is de-coupled, credit supply may not increase.[8]

Ivashina and Scharfstein (2010) showed that new loans to large borrowers in the United States fell by 47% during the peak period of the financial crisis (4th quarter of 2008). Puri, Rocholl, and Steffen (2011) discovered evidence that in Germany banks affected by financial crisis rejected substantially more loan applications than non-affected banks. The Bank of England (2012) stated that, since the 2008 Financial

[4] See Centre for Banking, Finance and Sustainable Development (2012).

[5] In the U.S. this is the Federal funds rate and in the U.K. this is the official bank rate.

[6] In the case of the United States after the 2008 financial crisis, MBS became very risky and illiquid stemming from a collapsing U.S. housing market.

[7] For example, in the United States, Section 128 of the Emergency Economic Stabilization Act of 2008 allows the Federal Reserve (Fed) to pay interest on bank excess reserves at the Fed. This type of risk-free returns dovetails nicely with the risk aversion adopted by the banks and takes away incentive for the banks to extend credit to businesses.

[8] According to The Economist (2013), quoting IMF and Bank of Italy studies, investors' concern about bank and sovereign risks pushed up the banks' borrowing cost in the euro zone, negating the effect of ECB's easing. As a consequence, the supply of loans contracted.

Please cite this article as: Herbst, A.F., et al., Quantitative easing in an open economy—Not a liquidity but a reserve trap, *Global Finance Journal* (2014), http://dx.doi.org/10.1016/j.gfj.2014.03.004