Asymmetric effects of monetary policy with or without Quantitative Easing: Empirical evidence for the US

Georgios Karras [*],[1]

University of Illinois at Chicago, United States

ARTICLE INFO

ABSTRACT

Several rounds of Quantitative Easing since the financial crisis of 2008 have resulted in very large expansions in the monetary base of the US and other economies. This paper asks whether the effects of Quantitative Easing are subject to the asymmetries that have been established for more conventional monetary policies. Using US quarterly data from the 1950–2011 period, monetary base shocks and their effects on real GDP and industrial production are estimated. First, the paper's findings strongly support *sign* asymmetry: with or without Quantitative Easing, monetary base contractions have larger effects than monetary base expansions (the effects of which are often statistically insignificant). This characterizes both permanent and temporary (four-year) shocks to the monetary base. Second, there is also evidence of *size* asymmetry: the effectiveness of monetary base shocks declines with their size. Size asymmetry is found for both positive and negative monetary base shocks, but it appears to be stronger for negative shocks.

© 2013 Elsevier Inc. All rights reserved.

1. Introduction

The response of monetary policy to the financial crisis of 2008 and the recession of 2007–2009 has included an unprecedented expansion of the monetary base in the US and other economies. This is clearly illustrated in Fig. 1 which plots quarterly observations for the US monetary base from 1950:Q1 to 2011:Q4. It is apparent that for most of this period, in particular until the third quarter of 2008, the monetary base is growing relatively smoothly. This is dramatically changed in the fourth quarter of 2008, however, after which the monetary base is increasing at an explosive rate. By the fourth quarter of 2011, the monetary base has grown to $2.7 trillion, or more than three times its magnitude in the third quarter of 2008 ($872 billion). The monetary base is therefore increased by a factor of 3 in just three years. Fig. 2 plots the ratio of the monetary base to nominal Gross Domestic Product, effectively comparing over this time period the expansion of the monetary base with that of economic activity, as captured by GDP. For most of the pre-2008 period, the monetary base is increasing at a slower pace than nominal GDP, so the ratio gradually declines from 0.12 in 1950:Q1 to 0.06 in 2008:Q3 – though the minimum value of 0.05 is achieved in 1980. Again, what stands out is the sharp spike in the ratio beginning with 2008:Q4, raising its value to 0.17 by the end of 2011.

What has been the effect of this unparalleled monetary expansion on economic activity? A generally held view is that, by providing ample liquidity, this vigorous policy of Quantitative Easing helped prevent a repeat of the mistakes made during the Great Depression, and thus averted a deepening of the 2007–2009 recession.[2]

---

* Correspondence to: Department of Economics, University of Illinois at Chicago, 601 S. Morgan St., Chicago, IL 60607-7121, United States.
E-mail address: gkarras@uic.edu.

[2] See for example Bordo and Landon-Lane (2010) and Gagnon, Raskin, Remache, and Sack (2011).
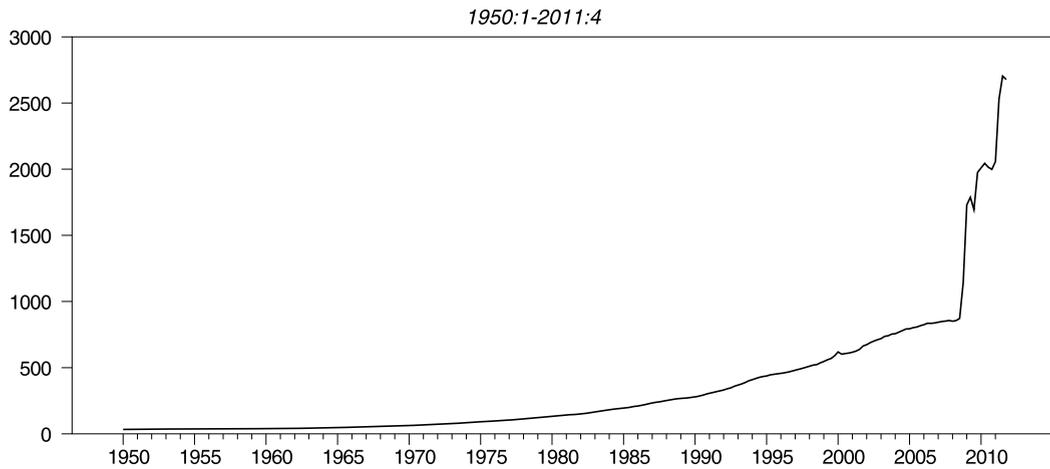

1950:1-2011:4

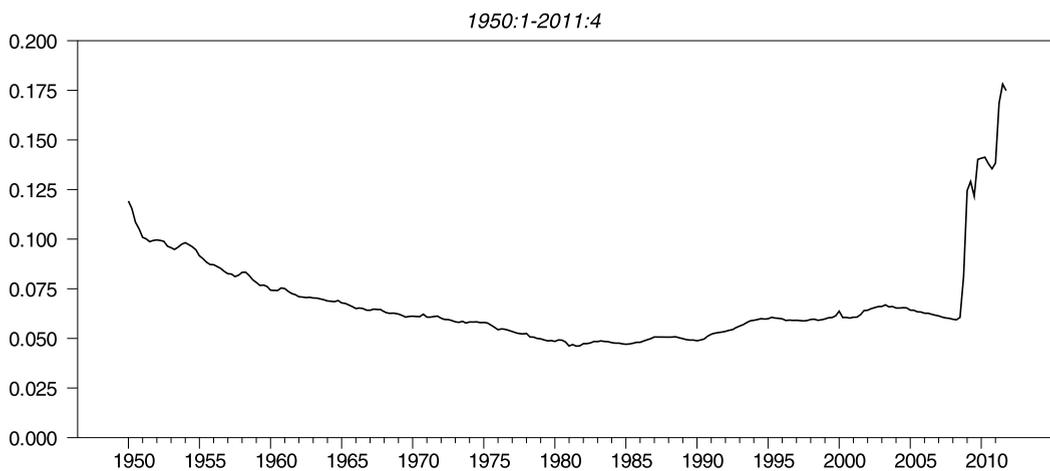**Fig. 1.** Monetary base: Billions of dollars.

1950:1-2011:4

Fig. 2. Ratio of monetary base to nominal GDP.

By now, existing theoretical models have been modified and new ones have been developed to study the effects of such Quantitative Easing policies.[3] It is now commonplace to distinguish between "conventional" monetary policies (that include changes in a short-term interest rate, such as the federal funds rate) and "unconventional" policies (that include Quantitative Easing). Unconventional policies are usually, though not exclusively, considered at the "zero lower bound": situations when the short-term interest rate has been pushed down virtually to zero. A large literature has examined various mechanisms that are thought to determine the efficacy of unconventional monetary options: liquidity effects, inflationary expectations, the credit channel, signaling (commitment) effects, and portfolio effects.[4]

Independent of this, a large number of studies have also been investigating whether the effects of monetary policy are asymmetric.[5] In this context, asymmetry usually refers to a situation in which monetary expansions have smaller effects than monetary contractions (*sign* asymmetry), or large monetary shocks have smaller real effects than smaller monetary shocks (*size* asymmetry), though additional types of asymmetry have also been considered.[6] As it is well known, theoretically, such asymmetries can be generated by (i) a convex aggregate supply, (ii) models that emphasize credit mechanisms, (iii) models with menu costs, or (iv) monetary authorities that respond differently to expansions than to downturns.

---

[3] See for example Curdia and Woodford (2011).

[4] For interesting discussions, see Blinder (2010), Cecchetti and Disyatat (2010), and Nelson (2011). For the experience of economies other than the US, see Anderson, Gascon, and Liu (2010), and Kapetanios, Mumtaz, Stevens, and Theodoridis (2012).

[5] See Cover (1992), Karras (1996a, 1996b).

[6] This literature is vast. See Florio (2004) for a recent survey. Recent contributions that show some of the variety of monetary asymmetries that have been considered are Sensier, Osborn, and Ocal (2002), Ravn and Sola (2004), Bruinshoofd and Candelon (2005), and Lo and Piger (2005).