Economics Letters 119 (2013) 24–27

Contents lists available at SciVerse ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

Asset prices, monetary policy, and aggregate fluctuations: An empirical investigation

Lichao Cheng [a,1], Yi Jin [b,*]

[a] China Life Center, Jinrong Street, Xicheng District, Beijing 100033, China

[b] Department of Economics, Monash University, Caulfield East, VIC 3145, Australia

ARTICLE INFO

Article history:
Received 17 November 2012
Received in revised form
2 January 2013
Accepted 8 January 2013
Available online 17 January 2013

JEL classification:
E31
E32
E44
E52

Keywords:
House prices
Stock prices
Term structure
Monetary policy
Structural vector autoregressions

ABSTRACT

This paper studies empirically the dynamic interactions between asset prices, monetary policy, and aggregate fluctuations in the U.S. during the Volcker–Greenspan period. Results from a simple structural vector autoregression indicate that monetary policy reacts directly to the term spread and indirectly to stock prices and house prices via output and inflation, that there is an asymmetry in the interactions between asset prices and aggregate activity, and that asset prices exhibit positive comovement.

1. Introduction

This paper employs a simple structural vector autoregression (SVAR) to investigate the dynamic interactions between asset prices, monetary policy, and aggregate fluctuations in the U.S. during the Volcker–Greenspan period. An innovative aspect of our study is that it incorporates stock prices, house prices, and the term structure of interest rates.[2] Our specification extends Christiano et al. (1999, CEE henceforth) to incorporate asset prices. Specifically, we consider an SVAR which consists of six quarterly variables, grouped in the vector $Z_t = [Y_t, \pi_t, R_t, TS_t, q_{Ht}, q_{St}]'$, where Y_t represents the log real GDP, π_t inflation, R_t the federal funds rate, TS_t the term spread, q_{Ht} the log real house price, and q_{St} the log real stock price. Following Iacoviello (2005), we take the Conventional Mortgage Home Price Index (CMHPI) to be the measure of house price. The Standard & Poor's 500 index (S&P500) is used as the measure of stock price. Both prices are divided by the GDP deflator. The term spread is the difference between the yields on the 10-year government bond and the 3-month T-bill. The inclusion of the term spread, which is inversely related to the long-term bond price, follows the lead of Chang et al. (2011). The list of these six variables is meant to represent in a concise manner the broad picture of monetary policy setting, macroeconomic performance, and the financial aspects of the economy.[3] We also add the CRB/BLS Spot Price Index as an exogenous variable to help resolve the "price puzzle".

We adopt a variant of CEE's short-run recursiveness identification scheme. Although a fully fledged analysis would involve other identification strategies, such as the use of long-run restrictions or sign restrictions, our SVAR has already delivered a rich set of

* Corresponding author. Tel.: +61 3 99032042; fax: +61 3 99031128.
E-mail addresses: chenglc@clamc.com (L. Cheng), yi.jin@monash.edu (Y. Jin).
1 Tel.: +86 10 66221371.

2 The paper is related to the empirical literature on the relationship between monetary policy, the business cycle, and stock prices (Fama and French, 1989; Patelis, 1997; Thorbecke, 1997; Rigobon and Sack, 2003; DeStefano, 2004; Bernanke and Kuttner, 2005; Bordo et al., 2007, etc.). It is also related to the growing body of literature on the role of housing market in the macroeconomy (Iacoviello and Minetti, 2003, 2008; Jin and Zeng, 2004; Leung, 2004; Iacoviello, 2005; Chen and Leung, 2007; Del Negro and Otrok, 2007; Carrington and Madsen, 2011; Jaccard, 2011; Chen et al., 2012; Chang et al., 2012; Punzi, forthcoming, among others).

3 The data sources are as follows. Federal funds rate: Federal Reserve Board. Term spread: Bloomberg. CMHPI: Freddie Mac. Stock price index: Online Data Robert Shiller. Real GDP and GDP deflator: Bureau of Economics Analysis.

0165-1765/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
doi:10.1016/j.econlet.2013.01.005

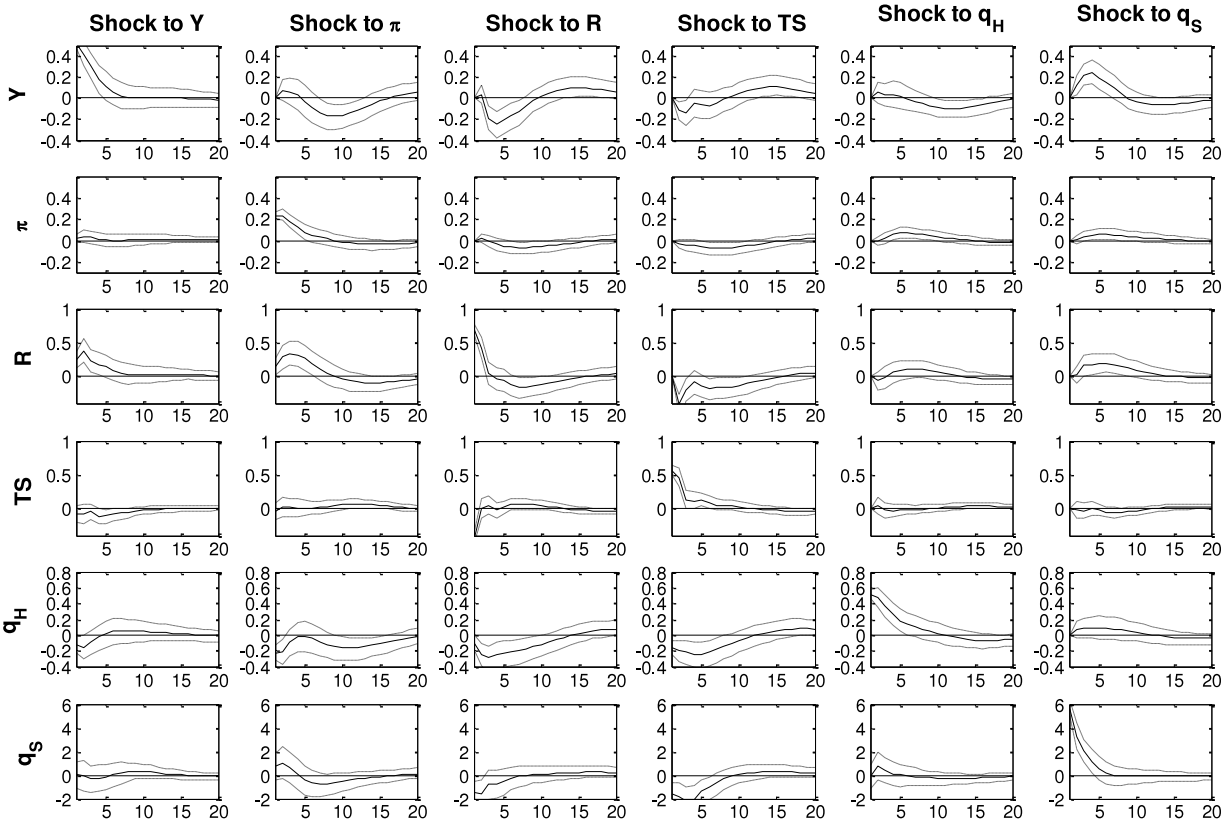

Fig. 1. Impulse responses.

important results, despite its apparent simplicity. The ordering of variables we adopt captures the idea that asset prices are the most responsive, while output and inflation are the most sluggish, reflecting the common perception that changing the quantities and prices of most goods and services is subject to various sorts of adjustment costs (Sims and Zha, 2006). Our sample period covers the Volcker–Greenspan period, i.e., 1979Q3–2006Q1. This reflects our desire to look at a historical period where monetary policy was conducted in a relatively consistent manner, i.e., without major structural breaks. The same consideration leads us to defer to future research the investigation of the recent Global Financial Crisis and the ensuing Great Recession, when monetary policy appeared to be "unconventional". The analysis in this paper is thus more about the normal time of business of monetary policy making. As for the number of lags, the Akaike information criterion (AIC) suggests three, while the Schwarz information criterion suggests one. As a compromise, we take two for the benchmark.[4]

2. Results

As the dynamic interactions between monetary policy, output, and inflation have been well known from CEE and the related literature, our presentation below focuses on the results related to asset prices. The impulse responses are presented in Fig. 1 (the dashed lines represent 90% confidence intervals). We also use forecast error variance decomposition to gauge the contributions of shocks to the volatilities of the endogenous variables.

2.1. Systematic monetary policy versus monetary policy shock

The monetary policy instrument – the federal funds rate – contains both a systematic component (reaction to the state of the economy) and a shock component (called "monetary policy shock"). Our estimation results indicate that the funds rate declines following a positive term spread shock. This means that the central bank lowers the policy rate when it anticipates economic tightening in the future, or when it believes that private agents anticipate future tightening. On the other hand, a positive funds rate shock reduces the term spread, implying that future short-term rates are expected to rise by less than the current short-term rates. We also find that the funds rate does not react directly to stock and house price movements, i.e., the estimated coefficients on stock and house prices in the funds rate equation are statistically insignificant. However, this does not preclude the funds rate from responding indirectly to these prices via output and inflation movements. Indeed, the impulse responses show that a positive stock price shock has positive, lagged effects on the funds rate.

For short forecast horizons, monetary policy shock is the dominant source of funds rate variability. Output, inflation, and term-spread shocks are also important, while stock and house price movements have negligible influences. Over time, inflation shock gains importance. And stock and house price shocks have some impacts on the funds rate volatility over long forecast horizons. In the unconditional variance decomposition, monetary policy shock accounts for 31% of the funds rate volatility, inflation shock accounts for 22%, term spread shock 18%, output shock 14%, stock price shock 10%, and house price shock 6%. Hence asset price movements are not to be neglected when accounting for the volatility of the monetary policy instrument.

The effects of a positive funds rate shock on stock and house prices are both negative, with noticeable differences. First, the stock price declines by a much greater extent. In response to a

[4] We have also conducted robustness checks including (1) changing the ordering of variables, (1) changing the number of lags from two to three (as the AIC indicates), (2) using the consumer price index instead of GDP deflator to deflate stock and house prices, and (3) using the American Stock Exchange's AMEX index to replace the S&P500 index as the measure of stock price. Broadly speaking, the results remain robust against these changes.