



## Impact of monetary policy changes on the Chinese monetary and stock markets



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### HIGHLIGHTS

- The impact of Chinese monetary policy change surprises on the SHIBOR monetary market and stock market is studied.
- Sign effect is observed on announcing and effective dates.
- Relative larger fluctuation is observed before event dates.
- Lowering policy drive stock market climb with a delay of 2 days.
- In the bear market, a lowering policy change brings larger volatility in stock market.

### ARTICLE INFO

#### Article history:

Received 4 November 2012

Received in revised form 30 April 2013

Available online 24 May 2013

#### Keywords:

Econophysics  
Monetary policy  
SHIBOR  
Stock market

### ABSTRACT

The impact of monetary policy changes on the monetary market and stock market in China is investigated in this study. The changes of two major monetary policies, the interest rate and required reserve ratio, are analyzed in a study period covering seven years on the interbank monetary market and Shanghai stock market. We find that the monetary market is related to the macro economy trend and we also find that the monetary change surprises both of lowering and raising bring significant impacts to the two markets and the two markets respond to the changes differently. The results suggest that the impact of fluctuations is much larger for raising policy changes than lowering changes in the monetary market on policy announcing and effective dates. This is consistent with the “sign effect”, i.e. bad news brings a greater impact than good news. By studying the event window of each policy change, we also find that the “sign effect” still exists before and after each change in the monetary market. A relatively larger fluctuation is observed before the event date, which indicates that the monetary market might have a certain ability to predict a potential monetary change, while it is kept secret by the central bank before official announcement. In the stock market, we investigate how the returns and spreads of the Shanghai stock market index respond to the monetary changes. Evidences suggest the stock market is influenced but in a different way than the monetary market. The climbing of returns after the event dates for the lowering policy agrees with the theory that lowering changes can provide a monetary supply to boost the market and drive the stock returns higher but with a delay of 2 to 3 trading days on average. While in the bear market, the lowering policy brings larger volatility to the market on average than the raising ones. These empirical findings are useful for policymakers to understand how monetary policy changes impact the monetary and stock markets especially in an emerging market like China where

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the economy is booming and the policy changes impact the markets as surprises by the central bank without a pre-decided schedule. This is totally different from previous studies on FED, which follows pre-decided schedules for monetary policy changes.

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## 1. Introduction

Monetary policy changes made by the central bank of each country can bring a great influence to the financial markets [1]. A central bank can lower or raise benchmark rates to adjust the economy, which is similar to the interest rate. Several researchers [2–7] study how the Federal Reserve Board (FED), the central bank of the United States influences the markets both from the traditional finance research perspective [2,8–11] and statistical physics [12,13]. Some studies report stock markets respond differently to different policy actions and types [2,5]. For other countries and regions like South East Asia [14], the link between monetary policy and asset prices is also investigated. In study [15], the results suggest there is asymmetrical volatility before and after a Federal Open Market Committee (FOMC) meeting event in the Irish stock market. Similar research is conducted in the markets from Germany and the UK, where asset prices are negatively influenced by the UK monetary policy changes [16]. In the Euro Area, studies [17–20] focus on how the monetary policy changes made by the European Central Bank (ECB) can influence the markets. Expansionary monetary policy can lead to higher market liquidity in German, French and Italian markets [18], the ECB makes a clear impact on volatilities of the European index return [19]. The monetary policy changes are also studied from 13 countries in the Organization for Economic Co-operation and Development (OECD) [21] and Canada [22]. A wider collection of 16 countries are investigated in Ref. [23] and the authors find monetary policy changes influence the stock market returns on a monthly and quarterly basis. However, there is still a lack of study on how the market responds to the monetary changes in emerging markets like China, since the mechanisms of monetary policy changes adapted by other central banks might be different between developed countries and emerging markets like China. While some studies only focus on how the stock market responds [24], it is important to investigate how the monetary market responds to the monetary policy changes in China.

In this paper, we conduct research on the impact of the monetary policy changes made by the central People's Bank of China (PBC) to the monetary market and the stock market. Results of analysis suggest that the Shanghai Interbank Offered Rate (SHIBOR) monetary market and Shanghai stock market respond differently to the changes of interest rate ( $R$ ) and required reserve ratio (RRR). In a bear market, lowering  $R$  or RRR can bring a larger fluctuation into the stock market and a smaller fluctuation into the monetary market. There is a significant "sign effect" [12,25] that raising RRR or  $R$  can bring larger fluctuations to the SHIBOR market, while raising policies will impact the monetary markets more. For the stock market, there is an approximately two-day-delay for lowering policies to take effect, to drive the stock market index higher, which also agrees with the fact that lowering policies can provide a stronger money supply into the market and boost the market. For the SHIBOR market, the average fluctuations reach peaks at 1 or 2 days before the policy changes announcement dates and effective dates. This indicates the SHIBOR market has a certain predictability for monetary change surprises which the PBC keeps secret and releases as surprises without any schedules. All the 34 RRR changes and 16  $R$  changes between 2006-10-08 and 2012-05-11, covering 1401 trading days are studied in this research.

This paper is organized into four sections as follows. In Section 2, the Chinese monetary policy tools of RRR and  $R$ , the Chinese interbank monetary market index SHIBOR and the Shanghai stock market are introduced. In Section 3, the research method and data collection results with analysis are presented. The conclusions, discussions, contributions, and limitations are provided in Section 4.

## 2. Chinese monetary policy, SHIBOR and Shanghai stock market

After nearly thirty years of miraculous economic development since the 1980s with a stunning annual Gross Domestic Product (GDP) growth of over 8%, China has built an expanding economy that has overtaken Japan as the second-biggest only after the US and is expected to replace the US as the world's largest economy in the near future. While enjoying a huge economic boom, China is also suffering from serious problems of rising salary, energy and raw material costs along with the huge pressure to raise the Renminbi Yuan (RMB) currency exchange rate which erodes China's exports, a rapidly climbing Consumer Price Index (CPI), and speculating demand for property. It is a great challenge and also a top priority for the Chinese government to maintain an economic growth rate at the same high level while taming persistent inflation. China sticks to a so-called appropriate loose monetary policy in order to achieve healthy economic development.

The People's Bank of China (PBC), the central bank of China, plays a similar role of monetary policy maker as the FED reserve in the US to maintain the stability of the value of the currency and thereby promote economic growth. In PBC's monetary policy toolbox, major instruments are reserve requirement ratio (RRR), central bank base interest rate ( $R$ ), rediscounting, central bank lending, and open market operation [26]. Among them, RRR and  $R$  have a significant influence over the market and draw great attention from the public. What makes it more interesting is that the PBC's monetary committee announces all of the changes of both rates as sudden surprises without schedules. This is quite different from the way FED reserve makes rate change announcements, which will mostly follow a pre-determined schedule of Federal Open Market

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