Hawk or dove: Switching regression model for the monetary policy reaction function in China

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ABSTRACT

This paper investigates the monetary policy reaction function in China. We propose two hypotheses, namely, the "hawk regime" and the "dove regime" hypotheses. The former suggests that the central bank is more concerned about the inflation rate than the output, whereas the latter suggests otherwise. We examine these hypotheses using the endogenous switching model of Hu and Schiantarelli (1998), which allows the creation of a threshold index that divides the sample into two high and low price regimes on the basis of the inflation and asset price growth rates. The People's Bank of China places a low value on output and a high coefficient on inflation in a "high-price regime" and vice versa in a "low-price scheme," which are consistent with the hawk and dove regime hypotheses, respectively.

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1. Introduction

The monetary policy reaction function has recently attracted considerable academic attention.[1] Previous studies have focused on how the monetary policy of the central bank symmetrically responds to two conventional main targets, namely, inflation and output change (Abrams et al., 1980; Carmichael, 1991; Dua, 1988; Hakes, 1990; Romer and Romer, 1989; Orphanides, 2004; Witte, 1984). Recent studies have revealed that the responses of central banks are time variant or asymmetric in different inflation regimes. For example, Owyang and Ramey (2004) classified central banks into "hawk" and "dove" types on the basis of their policy preferences. A central bank that emphasizes inflation rate is considered a "hawk" type, whereas a central bank that focuses on output growth is considered a "dove" type.[2] Owyang and Ramey (2004) and Assenmacher-Wesche (2006) observed that the central banks of the United States and Germany reflected the "hawk regime hypothesis," which indicated that these central banks emphasized the problem of inflation. Shen and Hakes (1995) used inflation rate as a threshold to separate their sample into high and low inflation regimes. They used data from Taiwan and reported similar asymmetric results when the central banks reacted

to growth at inflation rates of below 3.8% (dove regime) and when they reacted to inflation when the inflation rates exceeded their threshold (hawk regime).

Determining whether the policy of a central bank emphasizes price stability or economic growth is important particularly under complex economic conditions. For example, the stagflation during the second oil crisis in 1982 prompted a heated debate on whether central banks should tighten their monetary policies to depress inflation or adopt an easy monetary policy to stimulate economic growth. This situation was frequently referred to as the price versus stability argument, but is now identified as the rudiment of the hawk and dove debates, with the former emphasizing price stability and the latter emphasizing economic growth. In the spring of 2014, given its uncertainty on whether the economy was moving toward recovery, the Federal Reserve System hesitated on deciding whether to tape off the quantitative easing monetary policy. This complex mood spilled over to the Wall Street, which cautiously read verbatim the speech of newly appointed Federal Reserve Governor Yellen to evaluate whether she was a hawk or dove policy supporter. The capital and exchange markets as well as the bank sectors also speculated on the timing of increasing the interest rate.

The same scenario was observed in China. In 2009, when the inflation rate exceeded the implicit threshold of 3%[3] amid increasing housing prices, the People's Bank of China (PBC) became unsure of the future economic conditions considering that the 2008 financial crisis was not completely over. Speculations and rumors also proliferated in the market. Eventually, PBC opted for the continuous implementation of the loose monetary policy to guide the economic recovery. However, the Bank also tightened its monetary policy through a sixfold increase in the required reserve ratio in 2010. It is plausible that the hawk and dove behaviors may co-exist, but we are wondering which animal will conquer the other. We test whether our model can reveal a hidden concept in the minds of central bankers.

This study examines whether PBC is a hawk or a dove by adopting the novel endogenous switching model (ESM) of Hu and Schiantarelli (1998).[4] We propose that the hawk and dove behaviors can coexist with different weights, which are determined by a threshold regression. Using the Markov switching model with transition probability as weights, Owyang and Ramey (2004) demonstrated that these two behaviors could coexist. They indicated that one could speak of a "hawk regime hypothesis" with a strong emphasis on inflation and a low regard for output stabilization, whereas another could speak of a "dove regime hypothesis" with a weak emphasis on inflation and a high regard for output stabilization. However, the Markov switching model of Owyang and Ramey (2004) disregarded the explanation of the switching between two regimes. Our ESM application allows the existence of two regimes, which is accounted for by the asset prices in the thresholds regression.[5]

Subsequently, we emphasize the influence of asset prices in a monetary reaction function. Our ESM includes two components, namely, the conventional reaction function and the threshold regression. In the reaction function, we consider the output and inflation gaps as the monetary final targets. PBC governor Zhou Xiaochuan has often stated publicly the four final goals of the monetary policy of China, namely, price stability, reasonable economic growth, high employment rate, and stable international payments.[6] This study only considers the first two goals as the final targets because the third goal is overlapped with output growth. Moreover, international payments are less of a concern in China because of the huge foreign reserves in the country.[7]

Our threshold equation considers the rates of both consumer price index (CPI) and asset prices. Although previous studies may also use inflation rate to classify their sample into two regimes, they ignore asset prices. Scholars have recently debated whether a monetary policy must consider asset price, such as stock price and real estate price, and such debates have intensified after the 2008 subprime financial crisis resulting from the US housing price collapse.[8] In 2009, the residential property market prices in China grew rapidly, particularly in several large- and medium-sized cities, as the effects of the global financial crisis began to subside and the domestic financial conditions were relaxed. These increasing prices placed PBC in a dilemma, in which the bank should decide on whether to prick the housing bubble. During our sample periods, PBC repeatedly warned the market that housing prices were becoming extremely high. PBC also published a series of notices to commercial banks asking them to tighten their control on real estate loans. For example, the minimum down payment for first-time buyers of smaller houses (below 90 m²) was raised to more than 20%, whereas that for first-time buyers of large houses (above 90 m²) was raised to more than 30%. In addition, the mortgage rate was raised eightfold from 5.76% to 7.83%. Therefore, our threshold regression considers not only inflation rate but also asset prices. The threshold regression is a linear combination of the inflation rate and housing price growth rate with the weights being unknown ex ante.[9]

Our threshold regression classifies the reaction functions into high- and low-price regimes. We posit that in a high-price regime, the hawk hypothesis dominates, which corresponds to a high-inflation regime with a high weight on inflation stabilization