

The Analysis of Contributions on the Housing Bubbles

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Abstract: In the past twenty years, the study of monetary policy and estate has become an essential component of the field of macroeconomics. The chief object of this paper examines that the loose monetary policy is not the main factor leading to the housing bubbles. With the internet bubbles bursting in the early 2000s, there was a destabilizing effect on the stock market and an increase in interest rates, causing the prices of housing to become higher. Some economists present that monetary policy plays a central role in housing bubbles but the findings in this paper would provide controversial views by analyzing the relationship between real macroeconomics in the 2000s in the U.S. and the monetary policy rule, such as Taylor Rule, Phillips Curve, Fisher Equation and the trend of aggregate demand. The change in the nominal interest rate would be higher than that in the inflation rate and real interest rate. The adjustment of monetary policy according to macroeconomics, including the unemployment rate and the extent of deflation. As a result, loose monetary policy is not the main reason for the housing bubbles.

Keywords: macroeconomics, monetary policy, housing bubbles, Taylor Rule

1. Introduction

Whether the loose monetary policy would result in housing bubbles becoming a severe social and academic focus by the public. Economists in the U.S. have put forward views that loose monetary policy, such as lower interest rates, have a remarkable influence on housing prices and other assets [1]. Robert Gordon, in 2009 [2], provided views that too low-interest rates during the period of 2003-2004 compared to the Taylor rule, inducing in the housing prices to surge, so the housing bubbles happening. Serious housing bubbles pose a high rate of housing vacancy but lead to a burden on citizens to afford as a result of cumulative increasing house prices. House prices have experienced slow growth since the beginning of the 1990s in the United States and reached a peak in 2006, which was a severe housing bubble in the history of the United States, triggering the global housing bubbles and financial crisis soon. Actually, Bernanke in 2010 reported [1], “the house prices had risen dramatically between 2004 and 2005, as the rate of house appreciation fluctuated about 16 percent per year”. The more accessible monetary policy implemented after the recession in 2001 was perhaps attributed to this situation, especially the remarkable fall in the federal funds rate between 2002 and 2004, which was the lowest level of federal funds rate in the past five decades. Through some research and measures by economists Dokko et al. [3], “the target federal funds rate declined from 6.50 percent in December 2000 to 1.75 percent in December 2001 and ultimately reached 1.00 percent in June

2003,” and according to Robert Gordon [2], “the short-term interest rate remained too low in 2003-2004”.

Even if the Fed began to have a rate hike at the end of 2004, it still could not block house prices from continuing to rise. Hence, perhaps the trend of macroeconomics depends on the type of monetary policies implemented. However, the housing bubbles may not be primarily owed to the loose monetary policy, as the relationship between interest rates and the level of the housing market is weak to present that the changes in the interest rates would result in the increase in house prices or investment rate in housing. Housing finance, external imbalances, and speculation may contribute to the housing bubbles to a certain extent. Accordingly, the housing bubbles attributed to the role of loose monetary is relatively weak through traditional macroeconomic approaches. Hence, in my opinion, loose monetary policy is not the main factor leading to the housing bubbles because of the weak relationship between the two of them.

2. Macroeconomics in the 2000s in the U.S.

The statistics of real GDP, inflation rate, and housing prices are significant to measure the whole macroeconomics.

After the internet bubbles in the 1990s, the real GDP showed a downtrend until 2001.

Fed aims the target of core CPE inflation rate of around 2 percent as its optimal inflation rate to stabilize the economy, as a 2 percent inflation rate could avoid deflation and or problems caused by high price levels. From the total trend, the core PCE inflation rate fluctuated between 1.4 percent and 2.5 percent from 2000 to 2006.

Figure 1 shows the changes in the levels of the price index in Cook County, its suburbs, and Chicago city [4]. Since 1997, the United States began to experience a housing boom. House prices began to grow, and the fastest rise in housing prices was in 2004 and 2005 [1]. Ultimately, it reached its peak in July 2006.

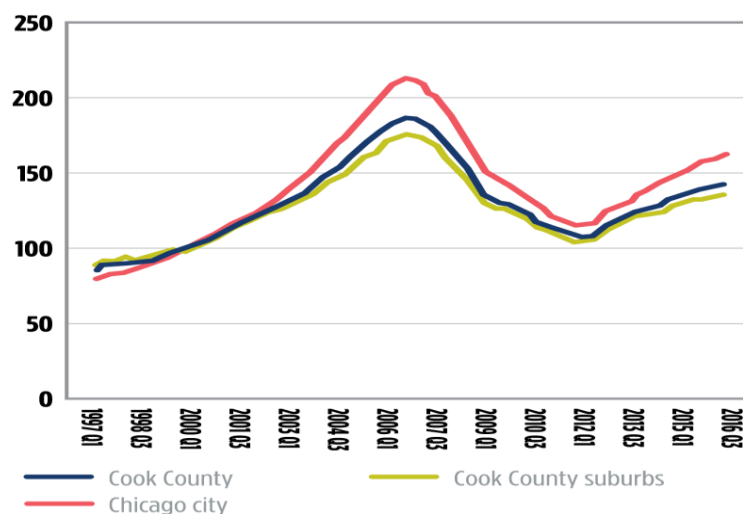


Figure 1: Housing price index in Cook County [4].

3. Overall Review of Monetary Policy Rule in the 2000s in the U.S.

The red line in figure 2 illustrates the monthly average of real federal funds rate [5]. The fed implemented the loose monetary policy, especially between 2002 and 2006, the actual fed funds rate was close to the zero lower bound, appearing to be lower than the Taylor rule prediction, which was a serious problem as it was too low for too long and the power of economy was weak.

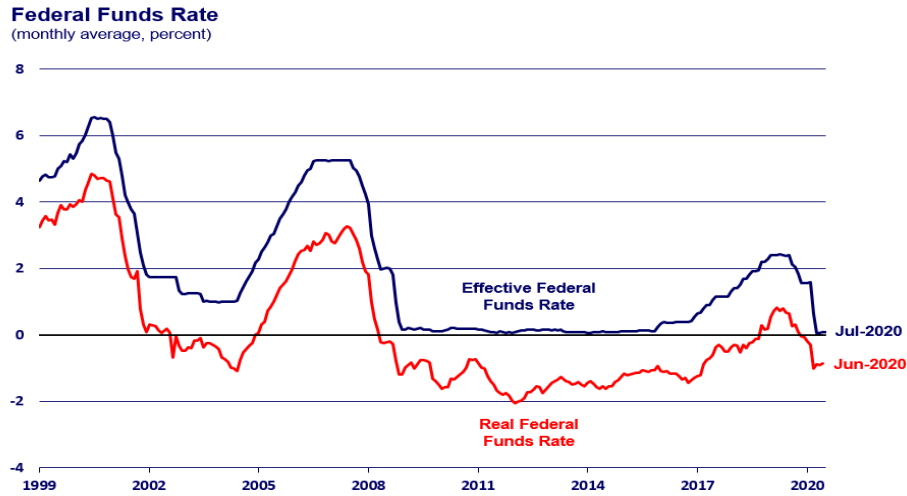


Figure 2: Monthly average federal funds rate [5].

Johns presented in 2014 [6] that this expansionary monetary policy easily led to over-saving and housing prices keeping climbing. In order to find the reason, we could use the Fisher equation showed below:

$$R = i - \pi \quad (1)$$

R is the real interest rate, i is the nominal interest rate, and π is the target inflation rate. According to the formula of IS curve showing the relationship of the output gap and real interest rate, $\widetilde{Y}_t = a - b(R_t - r)$, aggregate demand negatively depends on the real interest rate. Let's set an example, if the target inflation rate rises by 1 percent and the nominal interest rate raises less by 1 percent, then the real interest rate will decrease. Lower interest rates would increase the output gap as it will increase the demand for consumption and investments as saving money in the bank is no longer attractive. Thus, lower interest rate would result in higher demand for housing.

However, if the nominal interest rate was close to zero, in that case, cutting the interest rate is not effective to stimulate the economy, even leading to the potential of deflation.

The money supply increased between 2001 and 2002 to avoid the deflation like the great depression in 1920s and stimulate economy.

4. Taylor Rule, Aggregate Demand, Phillips Curve and Federal Funds Rate

Taylor rule is an effective tool as the baseline to compare the level of federal funds rate. Even though there are unpredictable external shocks happening in the world, for instance, the oil crisis occurred in 1970s or internet bubbles formed in 1990s, having huge influence on prices in the markets. Usually, these parameters would be different in different situations. As a result, policymakers could use the Taylor rule to calculate as a useful benchmark to tailor the interest rate in the future.

The Taylor rule is following below:

$$i_t = 2 + \pi_t + a(\pi_t - \pi^*) + b(y_t - y_t^*) \quad (2)$$

According to the Taylor rule, π^* is the inflation target about 2 percent, y_t^* is the potential output in an economy and i_t is the nominal interest rate. In Taylor rule (1993), a and b are equal to 0.5. When π^* decreases, the central bank will decrease the actual interest rate. But policymakers should

change the range of interest rate more than the target of interest rate. Let's make a change of the formulation showing above,

$$i_t = 2 + (a + 1)\pi_t - a\pi^* + b(y_t - y_t^*) \quad (3)$$

If we change the target of inflation rate by 1 percent, then the nominal interest rate would change by $(a+1)$ percent, so in Taylor rule (1993), the nominal interest rate would be 1.5 times as the change in inflation target. Thus, it proves that the small change in the inflation target may lead to larger change in real interest rate and the whole economy.

The Phillips curve illustrates the relation between the output gap and the change in inflation over periods. The Phillips curve could be written as below:

$$\Delta\pi_t = v\tilde{Y}_t + o \quad (4)$$

In the formulation, \tilde{Y}_t and $\Delta\pi_t$ are endogenous variables, v is the parameter, o is the external shock in an economy. As $\Delta\pi_t = \pi_t - \pi_{t-1}$, if interest rate increases, easily leading to the inflation target increasing, the output gap would be increased. Thus, as the supply of houses does not change, the demand for houses increases rapidly and its prices become higher soon.

5. The Evidence of Factors of the Housing Bubbles

The central bank chose to lower the interest rate after the recession in 2001 and what followed was increasing housing bubbles. According to Dokko et al. [3] in 2009, Housing is one of the most sensitive sectors to the monetary policy. Low interest rate would lead to the series of chain reaction. At first, people are not willing to purchase bills like national debts, which have low return rate, instead, they spend more on real estate to gain higher profits. In the short term, the supply of housing would not increase. Finally, the prices of housing increase rapidly to respond to the increasing demand. Undoubtedly, the reduction of nominal interest rate would change the demand for portfolio and mortgage. According to Mayer, Pence and Sherlund in 2009 [7], these mortgages could support people to buy more houses with higher prices and values. It perhaps enhances the popularity of the mortgage, as it allows people to purchase more expensive houses and through this financial cycle, the housing prices would be increasing more rapidly until none of elements stopped. Accordingly, the housing bubbles are influenced by the expectations of borrowers and investors in a great measure.

However, even though the central bank was scared if deflation happening, the central bank still lowered the interest rate instead of increasing it. Bernanke in 2009 suggested that there are two reasons. The first reason is the high employment rate even if the United State has been out of the great recession after 2001. During the financial crisis, in order to reduce the cost of manufacturing, industries shifted to foreign countries, especially countries in Southeast Asia. After this crisis, the number of employed increased significantly. The unemployment rate began to increase in 2001 and sustainably increased over 10 percent until 2008. Thus, lowering the interest rate could increase the liquidity in the financial market to create more working opportunities, which is beneficial to citizens to make a living. Second, deflation is a more serious problem than inflation. If a country experiences deflation, enterprises and individuals may have the limitations of investment, liquidity trap would happen. In Japan, for example, began to experience the painful deflation since 1990s and its economic growth rate was negative, leading to weak power of economy. With the deflation scare, policymakers worried that the U.S. would experience the deflation, the federal funds rate hit the zero lower bound.

The decrease in the interest rate indeed have influence on the housing prices, whether the loose interest rate cause the housing bubbles or the increase in housing prices would not happen if implementing tighter monetary policy. If the interest rate hikes, with the increase in household debt,

lower-quality borrowers find harder to pay the interest-rate debt and easily default, leading to large number of financial institutions locking down and causing financial system crisis. The consequence under the operation of high interest rate is not as satisfactory as we might predict.

Through the comparison of actual values of interest rate and the Taylor rule, we could find that the gap between them is not too noticeable.

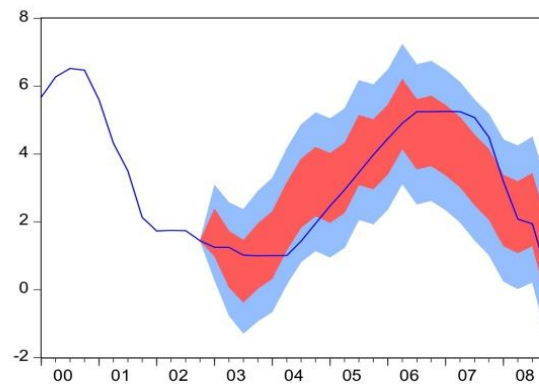


Figure 3: Conditional forecast for federal funds rate [3].

According to figure 3 [3] shown above, the figure is about the conditional forecasts for the federal funds rate and house prices. The interest rate was within the range of specific deviations; therefore, this monetary policy was not too loose. However, the fluctuation of housing prices further outraged the prediction. Therefore, though the real interest rate is lower than the calculation of Taylor's rule, the influence on the housing market is low.

During the same periods, generally speaking, in other countries like Japan, the interest rate always being close to the zero lower bound, but the house prices not sustainably increasing. This phenomenon could refute the monetary policy as an essential contribution to the housing bubbles.

According to Taylor in 1993 [8], Implementing a monetary policy when meeting the external shock is difficult, especially during the shocks when policymakers decide to transition the monetary rule to a new one. External shocks perhaps lead to fluctuations in housing prices more than monetary policy.

6. Conclusion

The conclusion of this study could be divided following below. First, the monetary policy rule, like the Taylor Rule, could provide the central bank with a vital bench to implement the monetary policy, but the influence on housing bubbles due to monetary policy is unnoticeable and indirect. The deviations of the housing prices and the nominal interest rate have a weak correlation. Second, according to the Phillips curve, a higher interest rate might result in higher aggregate demand and housing bubbles. Furthermore, the implementation of monetary policy does not depend on economic rule entirely, but is influenced by macroeconomics, such as the extent of unemployment or deflation rate. Setting up rational interest rates to prevent the potential of deflation is crucial for the central bank, increasing consumption and investment to stimulate the economy.

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