

MACRO ECONOMY PROCEEDINGS

Issue no. 8, February 2013

THE BUSINESS CYCLE IN CHINA SINCE THE LEHMAN CRISIS

Interaction among Macroeconomic Policy,
Economic Growth and Inflation

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An earlier version of this paper was presented at the conference 'China's Transition and the Global Economy' held in Tokyo by Nomura Foundation on 13 November 2012.

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Interaction among Macroeconomic Policy, Economic Growth, and Inflation

C. H. KWAN

Abstract

For China, the major objectives of macroeconomic policy are to stabilize economic growth and inflation, which in turn are major determinants of such key “prices” as the policy interest rate, the renminbi exchange rate, and stock prices. In a framework that distinguishes different phases of the business cycle based on whether the current period’s economic growth rate and inflation rate are above or below their “normal” values, this paper analyzes the interaction of macroeconomic policy, economic growth and inflation over time, and its implications for these key prices.

The path of China’s economy since the Lehman crisis indicates that stimulus measures taken by the government during the recession phase and tightening measures implemented during the overheating phase have helped minimize the fluctuation over the business cycle.

Based on the Taylor rule, which describes how monetary authorities adjust policy in response to changing economic conditions, our analysis shows that Chinese authorities tend to rely more on adjusting the exchange rate than the interest rate to stabilize the economy.

Finally, comparison with conditions at the time of the post-Lehman recession suggests that the current slow pace of economic growth in China may reflect not only weakening demand, but also a lower potential growth rate associated with the arrival of the Lewisian turning point.

INTRODUCTION

For China, the major objectives of macroeconomic policy are to stabilize economic growth and inflation, which in turn are major determinants of such key “prices” as the policy interest rate, the renminbi (RMB) exchange rate, and stock prices. This paper analyses the interaction of macroeconomic policy, economic growth and inflation over the business cycle, and its implications for these key prices.

Section 1 examines the course of China’s economy since the Lehman crisis of 2008 and the role of policy measures in restoring stability. It develops a framework to describe fluctuations in the economy over time based on whether the current period’s economic growth rate

and inflation rate are above or below their “normal” values. The incidence of above- or below-normal growth and inflation rates in each period defines a particular phase of the economy and drives the overall pattern of the business cycle.¹

Specifically, by noting that on average the course of China’s inflation rate tends to lag behind the economic growth rate by three quarters, the paper identifies a four-phase business cycle consisting of (1) a recession

¹ Unless otherwise stated we use the year-on-year (y-o-y) percentage change in the Consumer Price Index (CPI) as the measure of the rate of inflation and the year-on-year percentage change in real GDP as the measure of the rate of economic growth.

phase, with low growth and low inflation; (2) a recovery phase, with high growth and low inflation; (3) an overheating phase, with high growth and high inflation; and (4) a stagflation phase, with low growth and high inflation. From the movement of China's economy since the Lehman crisis, it appears that stimulus measures taken by the government during the recession phase and tightening measures implemented during the overheating phase have helped minimize the economy's fluctuation over the business cycle.

Section 2 applies the widely used Taylor rule to estimate the effect of inflation and GDP growth on key economic "prices" since 2005, when China adopted a managed floating exchange rate regime. The relationship is then used to estimate how the authorities adjust policy in response to changing economic conditions. The analysis suggests that Chinese authorities have not adjusted the policy interest rate to the extent expected to stabilize the economy, but rely more on the exchange rate to maintain price stability. It also shows that stock prices tend to respond positively to a rise in the economic growth rate but negatively to an increase in the inflation rate.

A concluding section examines the short-term outlook for China's economy. Although China's economic growth rate edged up to 7.9 percent in the fourth quarter of 2012 after dropping to 7.4 percent in the previous quarter, it is still much below the 9.0 percent it averaged since the fourth quarter of 2008. In contrast to the previous recession after the collapse of Lehman Brothers, when millions of workers lost their jobs, however, no serious employment problem has arisen this time. This suggests that the current slow pace of economic growth may reflect not only the short-term factor of weakening demand, but also the medium- to long-term factor of a lower potential growth rate associated with the shortage of labor accompanying the arrival of the Lewisian turning point (Lewis, 1954).

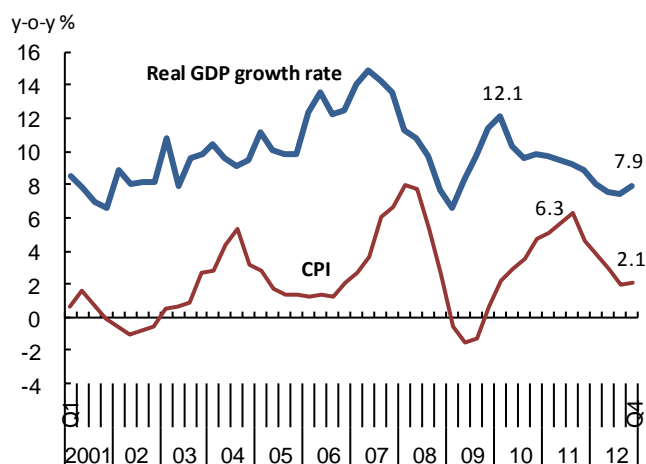
1. THE INFLATION RATE, THE ECONOMIC GROWTH RATE AND THE BUSINESS CYCLE

INFLATION RATE LAGS BEHIND ECONOMIC GROWTH RATE

In the wake of the collapse of Lehman Brothers in September 2008, the Chinese economy plunged into a recession with the growth rate falling to 6.6 percent in the first quarter of 2009. Then, economic stimulus measures amounting to four trillion yuan and a loose monetary policy drove a V-shaped recovery and economic growth reached 12.1 percent in the first quarter of 2010. Subsequently, however, growth started

to decelerate, thanks to another global economic turmoil (this time triggered by the sovereign debt crisis in Europe), the fading of the economic stimulus effect from the earlier measures, and a shift in monetary policy from easing to tightening in order to curb inflation, which rose from -1.5 percent in the second quarter of 2009 to 6.3 percent in the third quarter of 2011 (Figure 1). The slowdown in economic growth, in turn, has been followed by a fall in the inflation rate.

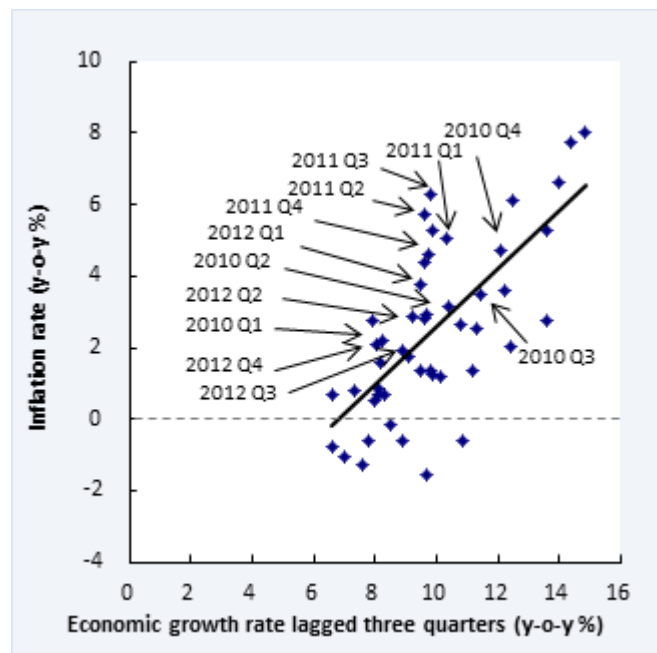
FIGURE 1: ECONOMIC GROWTH VERSUS INFLATION IN CHINA, 2001Q1-2012Q4



Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

As a general rule, the path of inflation rates lags the path of economic growth rates, and the rule applies to China as well. When the economic growth rate goes up, the inflation rate tends to rise with a certain lag, and likewise, when the economic growth rate moves down, the inflation rate tends to fall after a lag. When we analyze data for China for the period since 2001, we can see that changes in the inflation rate, on average, follow about three quarters behind changes in the economic growth rate. Indeed, a plot of the economic growth rate from three quarters prior along the x-axis and the inflation rate for the current quarter along the y-axis reveals a very strong correlation between the two variables (Figure 2).

FIGURE 2: CORRELATION BETWEEN THE ECONOMIC GROWTH RATE AND THE INFLATION RATE (2001 Q1 – 2012 Q4)



Note: Estimation results for period Q1 2001 – Q4 2012:

$$\text{CPI} = -5.59 + 0.82 * \text{GDP}_{t-3} \quad (6.57)$$

$$\bar{R}^2 = 0.47$$

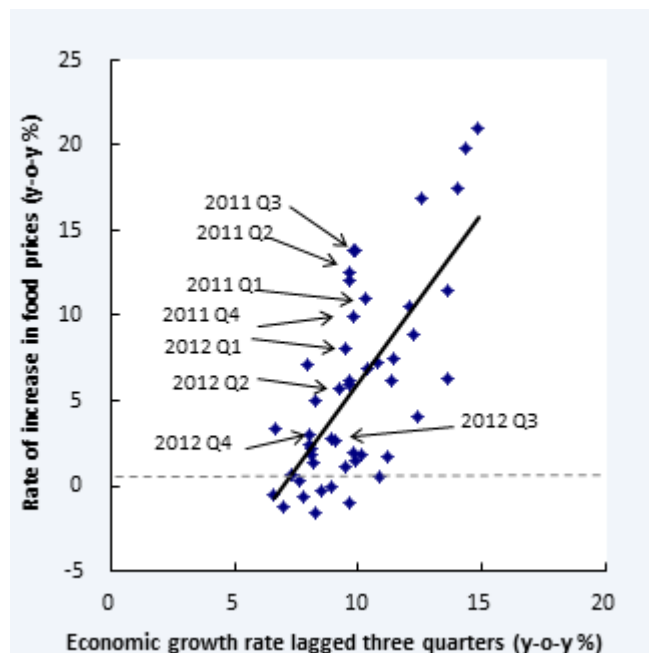
The number in parentheses denotes t-statistic. GDP_{t-3} represents the economic growth rate lagged three quarters.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

Simple regression shows that a one percentage point change in the economic growth rate three quarters earlier tends to change the current inflation rate by 0.82 percentage points in the same direction.

Our finding that the inflation rate in China lags the economic growth rate still holds, even taking into consideration the dominant role that food prices (which are affected by weather and movements in overseas markets) play in determining the Consumer Price Index (CPI). In fact, the year-on-year rate of increase in food prices also correlates strongly with the economic growth rate three quarters earlier, with the elasticity estimated at 2.00 (Figure 3). Thus, the response of food price inflation to the economic growth rate is greater than the response of the overall inflation rate as measured by the CPI. This reflects the fact that the supply of food falls as more peasants move to work in the cities during economic booms, and increases as peasants return to work in the countryside during recessions.

FIGURE 3: CORRELATION BETWEEN THE ECONOMIC GROWTH RATE AND FOOD PRICE INFLATION (2001 Q1 – 2012 Q4)



Note: Estimation results for the period Q1 2001 – Q4 2012:

$$\text{CPI-F} = -13.93 + 2.00 * \text{GDP}_{t-3} \quad (6.73)$$

$$\bar{R}^2 = 0.49$$

The number in parentheses denotes t-statistic. CPI-F represents the rate of food price inflation and GDP_{t-3} represents the economic growth rate lagged three quarters.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

BUSINESS CYCLE CENTERING ON ECONOMIC GROWTH AND INFLATION: CONCEPTUAL FRAMEWORK

If we delineate the phases of a business cycle according to whether the economic growth rate and the inflation rate are higher or lower than their respective benchmark (average) values, then the business cycle exhibits a different overall pattern depending on whether the inflation rate's position above or below its benchmark coincides with or lags the position of the economic growth rate relative to its benchmark.

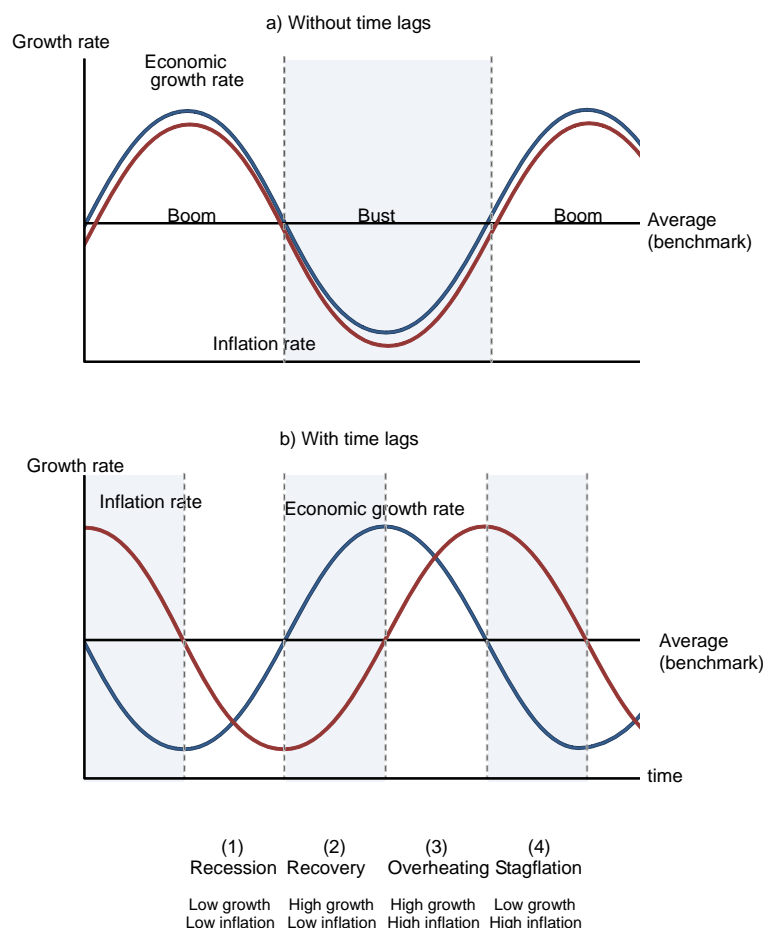
Suppose both the inflation rate and the economic growth rate are always on the same side of their respective benchmarks. In this case, the business cycle has only two phases, namely, a high growth–high inflation phase (boom period) and a low growth–low inflation phase (bust period) (Figure 4, panel a). When the economy is in a boom period, the central bank tightens monetary policy and, as a result, both the economic growth rate and the inflation rate will decrease. Conversely, in a bust period, the central bank eases monetary policy, leading to an increase in both

economic growth and inflation rates. The business cycle alternates between two phases and the economy goes from a boom to a bust and then returns to a boom again.

In contrast, if the relative position of the inflation rate is not in sync with the position of the economic growth

rate, the business cycle has four phases: 1) low growth and low inflation, 2) high growth and low inflation, 3) high growth and high inflation, and 4) low growth and high inflation. These phases correspond to periods when the economy is in recession, in recovery, overheating, and in stagflation (Figure 4, panel b).

FIGURE 4: PHASES OF THE BUSINESS CYCLE DEFINED BY THE RELATIONSHIP BETWEEN THE ECONOMIC GROWTH RATE AND THE INFLATION RATE



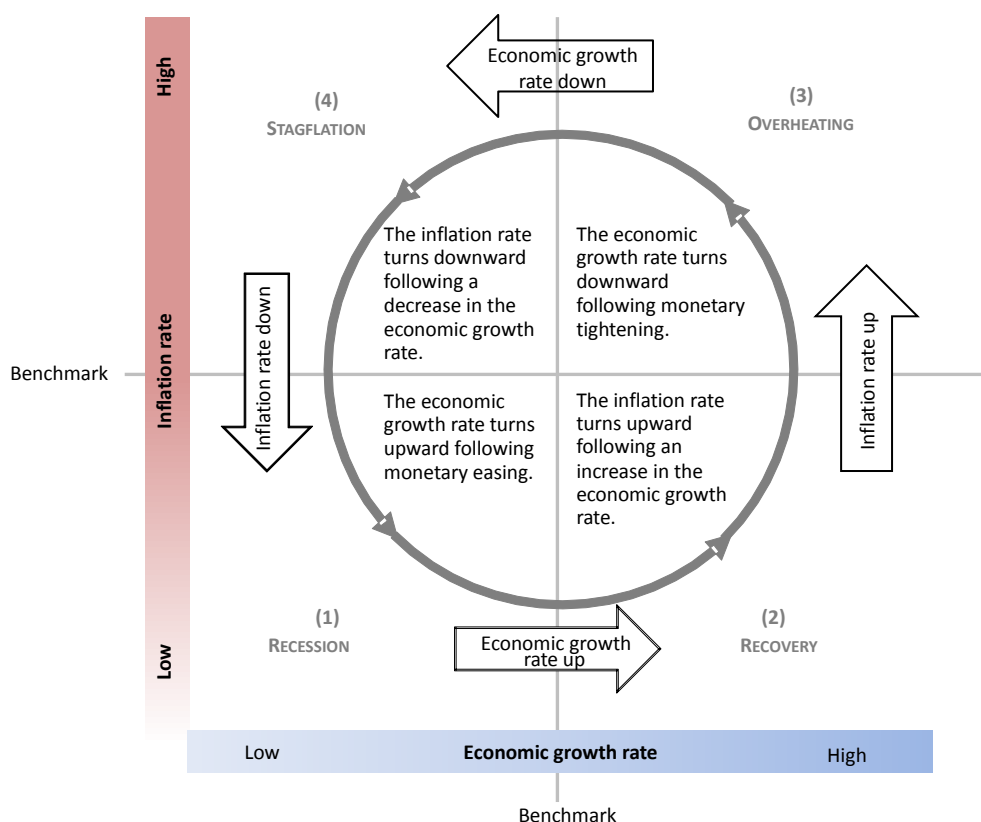
Source: Compiled by Nomura Institute of Capital Markets Research.

In a recession phase characterized by low growth and low inflation, the central bank eases monetary policy, which leads to an increase in the growth rate thereby guiding the economy into a recovery phase characterized by high growth and low inflation. Then, following behind the economic growth rate, the inflation rate moves up, and the economy enters an overheating phase, which is marked by high growth and high inflation. When the business cycle enters this phase, the government shifts its policy stance to a tightening mode, which in turn triggers a drop in the economic growth rate thereby leading the economy

into stagflation, with low economic growth and high inflation. As the economy slows, inflation cools down, ushering in a phase of low economic growth and low inflation, hence, a return to recession.

The path of the economy under this four-phased business cycle can be depicted as a counter-clockwise rotation on a coordinate plane with the economic growth rate on the x-axis and the inflation rate on the y-axis (Figure 5). Easy monetary policies implemented in times of recession and monetary tightening in times of overheating help the economy rotate through the circle.

FIGURE 5: BUSINESS CYCLE DESCRIBED BY THE INTERACTION BETWEEN ECONOMIC GROWTH AND INFLATION



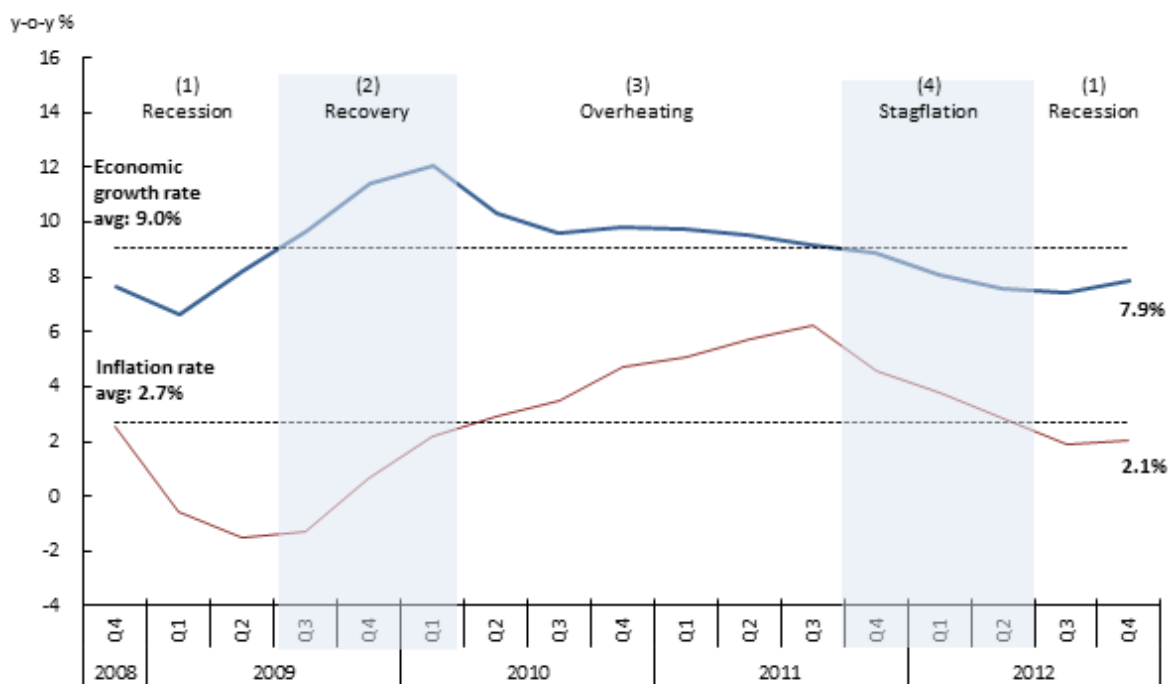
Source: Compiled by Nomura Institute of Capital Markets Research.

BUSINESS CYCLE CENTERING ON ECONOMIC GROWTH AND INFLATION: APPLICATION TO CHINA

In applying this analytical framework to post-Lehman China, we must first define the benchmarks against which to determine whether the economic growth and inflation rates at each point in time are high or low. Here, we use the average economic growth rate (9.0 percent) and average inflation rate (2.7 percent) for the period from the fourth quarter of 2008 through the fourth quarter of 2012 (Figure 6) as the benchmark values.

Referring to these benchmarks, we can infer that the Chinese economy entered into recession, a period of low economic growth and low inflation, in the fourth quarter of 2008 after the Lehman bankruptcy. In response to the weak economy, China quickly shifted its monetary policy stance from tightening to easing and implemented a massive four-trillion yuan fiscal stimulus package. These measures produced the intended results, with China's economic growth rate bottoming out at 6.6 percent in the first quarter of 2009. In the third quarter of 2009, the economic growth rate crossed the benchmark level of 9.0 percent, but inflation remained below the 2.7 percent benchmark, indicating that the economy had entered a recovery phase with high economic growth and low inflation.

FIGURE 6: PHASES OF THE BUSINESS CYCLE IN POST-LEHMAN CHINA



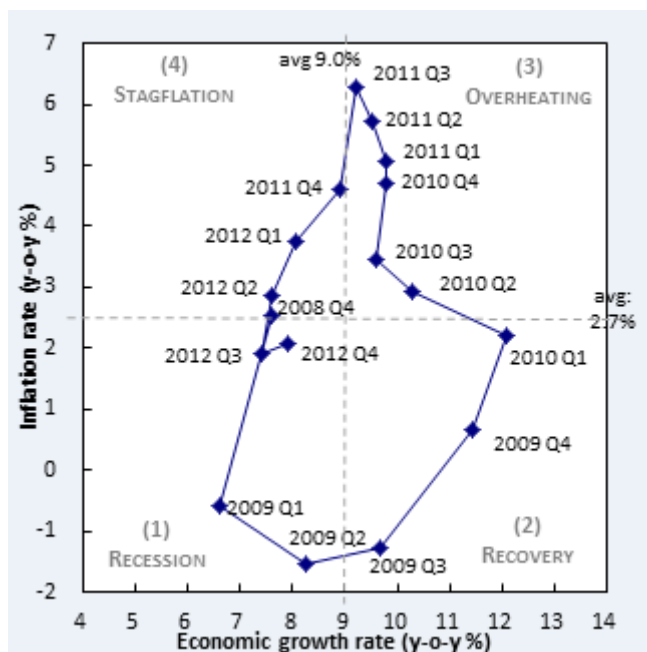
Note: Phase (1): low growth and low inflation; phase (2): high growth and low inflation; phase (3): high growth and high inflation and phase (4): low growth and high inflation.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

Then, in the second quarter of 2010, the inflation rate exceeded its benchmark following the earlier rise in the economic growth rate, and the economy moved into an overheating phase characterized by high economic growth and high inflation. The central bank responded by shifting its monetary policy stance from easing to tightening. As a result, the economic growth rate turned downward, dipping below its benchmark in the fourth quarter of 2011, and the economy entered into a stagflation phase with low economic growth and high inflation. Subsequently, the inflation rate also started to fall, and by the third quarter of 2012, the economy moved into a recession phase with low economic growth and inflation.

Looking at China's business cycle in terms of the relationship between the economic growth rate and the inflation rate, we can see that the economy has just completed one full rotation since the collapse of Lehman Brothers (Figure 7).

FIGURE 7: CYCLICAL CHANGES IN THE ECONOMIC GROWTH AND INFLATION RATES IN POST-LEHMAN CHINA



Note: Phase (1): low growth and low inflation; phase (2): high growth and low inflation; phase (3): high growth and high inflation and phase (4): low growth and high inflation. The economy circulates counterclockwise in the order of (1) → (2) → (3) → (4) → (1).

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

2. DETERMINANTS OF KEY “PRICES” OVER THE BUSINESS CYCLE: EMPIRICAL ANALYSIS BASED ON THE TAYLOR RULE

The economic growth rate and the inflation rate, which have been the focus of our analysis so far, are also major determinants of key prices in China, including the policy interest rate, the exchange rate and stock prices.

The Taylor rule has been widely used to analyze how economic conditions, such as changes in inflation and economic growth rates, affect interest rates. Here, we apply the Taylor rule formula to China and use regression estimates to explain how, not only interest rates, but also the exchange rate and stock prices respond to changes in inflation and economic growth rates. The analysis covers the period from the third quarter of 2005—which began in July when China shifted from the dollar-peg regime to the managed floating exchange regime—to the fourth quarter of 2012.

THE TAYLOR RULE

John B. Taylor, former Under Secretary of the U.S. Treasury (2001-2005) and current professor of economics at Stanford University, put forward the Taylor rule as a guide to formulating monetary policy (Taylor, 1993). The rule proposes that the policy interest rate should be determined in response to the divergence of actual inflation from the long-term inflation target and the divergence of current economic activity from its equilibrium level (measured by the GDP gap). The monetary authorities should raise the policy interest rate when the actual inflation rate exceeds the target inflation rate or when actual GDP exceeds potential GDP, and lower it when the opposite applies. The optimal level of the policy interest rate (i^*) under the Taylor rule is obtained by the following equation:

$$i^* = \text{actual inflation rate} + \text{equilibrium real interest rate} + 0.5 \times (\text{actual inflation rate} - \text{target inflation rate}) + 0.5 \times (\text{GDP gap}).^2$$

Using the example of the United States, if we assume that the equilibrium real interest rate is 2 percent and the target inflation rate is 2 percent, then the optimal level of the federal funds rate (FF^*), which is the policy interest rate, can be obtained by the following equation, where i is the actual inflation rate:

² The GDP gap is calculated by subtracting potential GDP from actual GDP. Thus, a larger gap indicates a more overheated economy.

$$\begin{aligned} FF^* &= i + 2\% + 0.5 \times (i - 2\%) + 0.5 \times \text{GDP gap} \\ &= 1.5 \times i + 0.5 \times \text{GDP gap} + 1\% \end{aligned}$$

Thus, according to the Taylor rule, the U.S. Federal Reserve should raise the federal funds rate by 0.5 percentage points in response to a one-percentage point expansion of the GDP gap and by 1.5 percentage points in response to a similar one-percentage point rise in the inflation rate. The idea that the policy interest rate must be raised by more than the rise in the inflation rate in order to stabilize the macro economy is called the Taylor principle.

While the Taylor rule was originally developed to determine the optimal level of the policy interest rate, it has also been widely used to examine how the U.S. Federal Reserve actually reacts to macroeconomic changes. In this case, the policy interest rate is formulated as a function (known as a reaction function) of the inflation rate and the GDP gap, whose parameters are derived from empirical data instead of being given *a priori*.

DETERMINANTS OF THE POLICY INTEREST RATE

Regarding the Taylor rule as a policy reaction function, we estimate a regression equation with the economic growth rate and inflation rate as explanatory variables in order to understand how Chinese authorities adjust the policy interest rate to macroeconomic conditions.

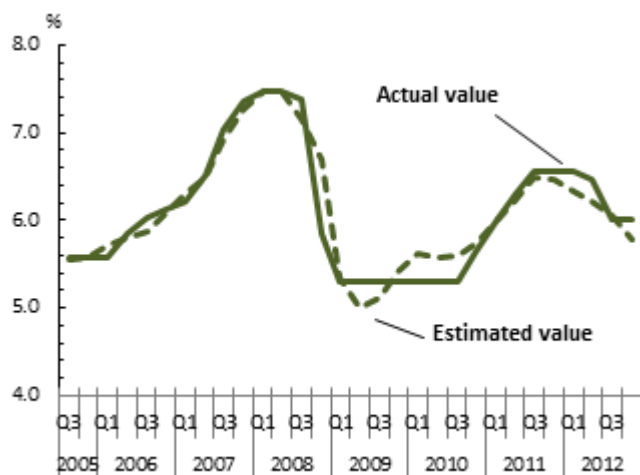
Specifically, we use the one-year base lending rate of Chinese financial institutions as the benchmark for the policy interest rate, the explained variable in the regression analysis. For the explanatory variables, we use the CPI rate on a year-on-year basis as the measure of the inflation rate and the economic growth rate as a proxy for the GDP gap, which China does not officially publish.³ In addition, the base lending rate for the previous quarter is added as a third explanatory variable to account for the inertia of monetary policy.⁴ The estimated coefficients from this regression suggest that Chinese monetary authorities adjust the policy rate by only 0.10 percentage points for each one-percentage point change in the inflation rate and by 0.06

³ Strictly speaking, the proxy for the GDP gap should be the difference between the actual and potential GDP growth rates. For simplicity, however, only the actual economic growth rate is included in the estimating equation, assuming that the potential growth rate is constant.

⁴ For simplicity, the equilibrium real interest rate and the target inflation rate, which are components of the Taylor rule, are assumed constant and excluded from the estimation equation.

percentage points for each one-percentage point change in the growth rate (Figure 8).

FIGURE 8: CHANGES IN THE ONE-YEAR BASE LENDING RATE—ACTUAL AND ESTIMATED VALUES



Note: The estimated value is based on the following regression equation.

$$\text{BLR} = 1.27 + 0.10 * \text{CPI} + 0.06 * \text{GDP} + 0.64 * \text{BLR}_{t-1}$$

(4.25) (2.97) (7.74)

$$\bar{R}^2 = 0.89$$

BLR is base lending rate, which has a one-year maturity. CPI represents the inflation rate and GDP the economic growth rate. The subscript t-1 indicates a one-quarter lag. Numbers in parentheses are t-statistics. Estimation period is Q3 2005–Q4 2012.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

According to the Taylor principle, in order to stabilize the economy, the authorities should adjust the policy interest rate by more than the change in the inflation rate; our regression estimate (0.10) suggests that Chinese authorities do not adjust the policy rate to this extent. Hence, China's real interest rate is inversely correlated with the inflation rate, and it is evident that interest rate policy has not played its expected role as an instrument to stabilize China's economy (Figure 9).⁵ The authorities' attempt to maintain a relatively stable exchange rate, coupled with rising capital mobility, has limited their scope to adjust the policy interest rate.

FIGURE 9: REAL BASE LENDING RATE INVERSELY CORRELATED WITH THE INFLATION RATE



Note: The base lending rate has a one-year maturity. Real base lending rate = Nominal base lending rate — inflation rate (year-on-year)

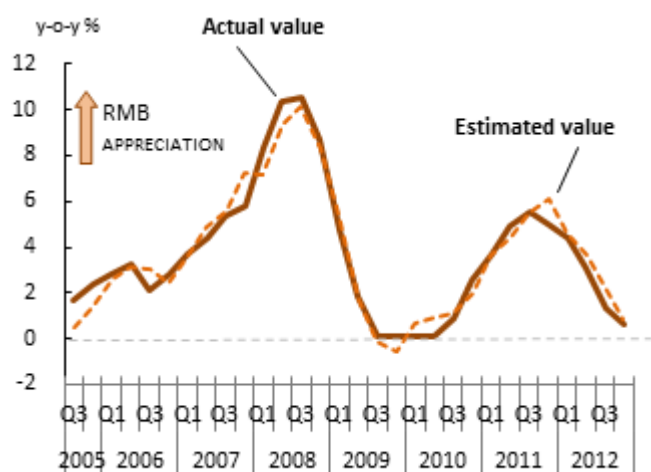
Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

DETERMINANTS OF THE RMB EXCHANGE RATE

Next, we apply the Taylor rule to analyze the determination of the RMB exchange rate by estimating a regression with the exchange rate of the renminbi against the U.S. dollar (USD/RMB) as the explained variable, and the CPI inflation and economic growth rates as explanatory variables. All variables are year-on-year changes. To account for time lags and exchange rate inertia, we used the inflation rate for the preceding quarter rather than for the current quarter, and we added the renminbi-dollar exchange rate for the preceding quarter as an explanatory variable. Our estimation shows that the RMB exchange rate adjusts by 0.53 percent to a one-percentage point change in the prior quarter's inflation rate and by 0.30 percent to a one-percentage point change in the economic growth rate (Figure 10).

⁵ Adjusting statutory reserve ratios, instead of base interest rates, has become the major instrument of monetary policy in China. To curb inflation, authorities raised the statutory reserve ratio applicable to major banks twelve times, from 15.5 percent to 21.5 percent, between January 2010 and July 2011. This helped slow the growth of M2 money supply by reducing the credit multiplier.

FIGURE 10: CHANGES IN RMB EXCHANGE RATE AGAINST THE U.S. DOLLAR (USD/RMB)—ACTUAL VERSUS ESTIMATED VALUES



Note: The estimated value is based on the following regression

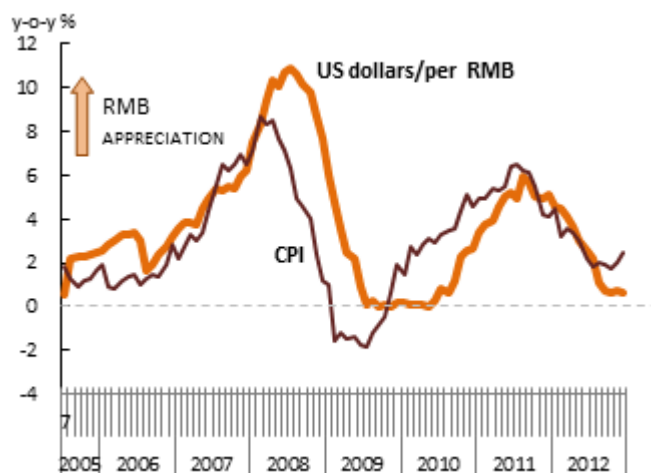
$$\text{USD/RMB} = -3.36 + 0.53 * \text{CPI}_{t-1} + 0.30 * \text{GDP} + 0.62 * \text{USD/RMB}_{t-1}$$

$$\bar{R}^2 = 0.94$$
 Numbers in parentheses are t-statistics. CPI represents the inflation rate and GDP the economic growth rate. The subscript t-1 indicates a one-quarter lag. Estimation period is Q3 2005 – Q4 2012. RMB rate is based on period averages.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

Comparing changes in the RMB exchange rate and the inflation rate since the third quarter of 2005, we can see that the higher the inflation rate, the more the renminbi appreciates against the dollar (Figure 11). This is contrary to the market principle and suggests that China is using the exchange rate as a tool to maintain price stability.

FIGURE 11: RATE OF RMB APPRECIATION AND INFLATION RATE



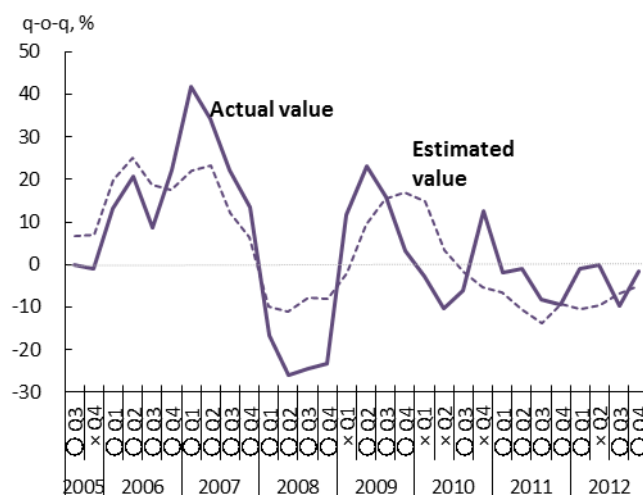
Note: Monthly average of the RMB exchange rate (U.S. dollars per renminbi).

Source: Compiled by Nomura Institute of Capital Markets Research based on data from the National Bureau of Statistics and the State Administration of Foreign Exchange (SAFE) of China.

DETERMINANTS OF STOCK PRICES

Finally, we apply the Taylor rule to analyze the determination of stock prices in China by estimating a regression equation with the quarter-on-quarter change in the Shanghai Stock Exchange (SSE) Composite Index as the explained variable and the year-on-year economic growth and inflation rates as the explanatory variables. Our estimation shows that the SSE Composite Index responds by 4.86 percent to a one percentage point change in the economic growth rate, and by -3.55 percent to a one percentage point change in the inflation rate (Figure 12). Estimated changes in the SSE Composite Index move in the same direction as the actual values in 24 out of the 30 quarters, with inconsistent movements observed only in the remaining six quarters.

FIGURE 12: CHANGES IN THE SSE COMPOSITE INDEX—ACTUAL VERSUS ESTIMATED VALUES



Note: The estimated value is based on the following regression.

$$\text{SSE-CI} = -36.17 + 4.86 * \text{GDP} - 3.55 * \text{CPI}$$

$$(5.10) \quad (-4.10)$$

$$\bar{R}^2 = 0.54$$

Shanghai Composite Index (SSE-CI) is period average of quarter-on-quarter percent change. Other variables are year-on-year percentage changes. Numbers in parentheses are t-statistics. Estimation period is Q3 2005 to Q4 2012.

○ indicates estimated value rises or falls with the actual value.
 × indicates estimated value moves in the opposite direction from the actual value.

Source: Compiled by Nomura Institute of Capital Markets Research based on CEIC database.

3. SHORT-TERM ECONOMIC OUTLOOK

The Chinese economy is likely to pick up in 2013 on the back of more expansionary fiscal and monetary policies pursued by the government. A large-scale stimulus comparable to the four-trillion yuan package implemented after the Lehman crisis, however, is unlikely, and the decline in the potential growth rate

resulting from the shortage of labor may also limit the pace of recovery.

ECONOMIC GROWTH TO PICK UP

Responding to the recent bout of decelerating growth and falling inflation, the Chinese government has shifted its macroeconomic policy stance from tightening to easing. The monetary authorities reduced reserve requirement ratios three times by a total of 1.5 percentage points since December of 2011, and they followed by cutting interest rates for two consecutive months in June and July of 2012. Fiscal policy has become more expansionary as the government speeds up the approval of major investment projects. In the wake of these moves, the economic growth rate edged up to 7.9 percent in the fourth quarter of 2012. We expect the recovery to continue in 2013, while inflation is unlikely to pick up until the latter half of the year. In terms of Figure 7, the economy should continue to revolve through the business cycle in a counter-clockwise direction from the lower left quadrant.

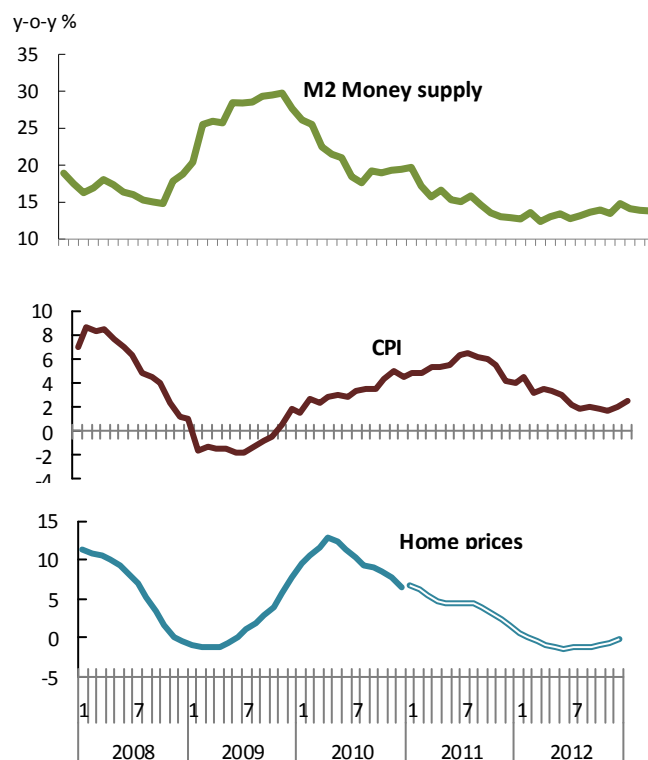
ANOTHER LARGE-SCALE STIMULUS PACKAGE UNLIKELY

In contrast to its response following the Lehman crisis, the government has taken relatively weak stimulus measures so far in the current slowdown. Recent experience has shown that implementing such measures may be very costly. Although the policies quickly implemented after the collapse of Lehman Brothers in September 2008 enabled China's economy to achieve a V-shaped recovery in 2009, several distortions brought about by these policies have since gradually come to the fore.

First, the central government financed only 1.18 trillion yuan of the four trillion yuan in economic stimulus measures, with local governments having to raise the remaining funds from banks and other sources. As a result, local government debt (including debt raised through financing platforms established to procure funds for infrastructure investments) has been increasing sharply, and it is feared that some local government debt may end up as non-performing bank loans.

Second, following the easing of monetary policy, the money supply (M2) jumped, peaking at 29.7 percent year-on-year in November 2009. The resulting liquidity expansion gave rise to inflation and to a steep increase in home prices. The year-on-year increase in the CPI reached 6.5 percent in July 2011, while the year-on-year increase in home prices in 70 large and medium-sized cities hit 12.8 percent in April 2010 (Figure 13).

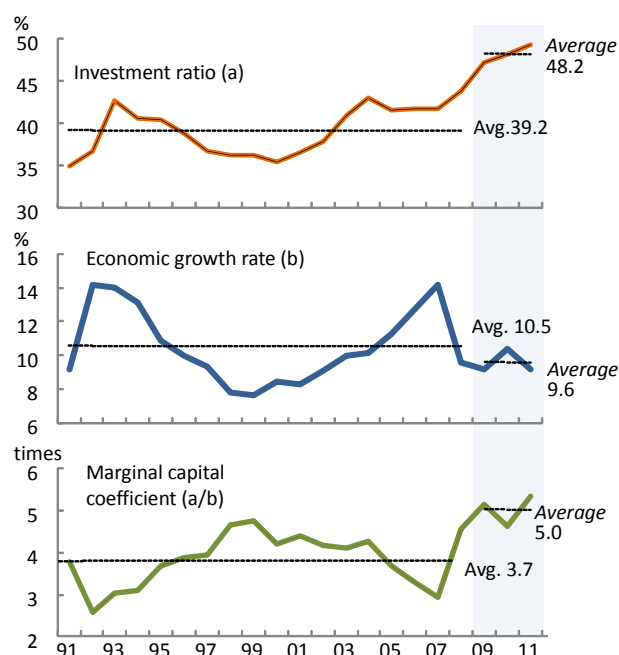
FIGURE 13: MONEY SUPPLY, INFLATION AND HOME PRICES IN CHINA AFTER THE LEHMAN COLLAPSE



Note: Home prices in large and medium-sized cities are based on indices of sales prices of residential buildings until December 2010 and on indices of average sales prices of newly constructed homes from January 2011. Source: Compiled by Nomura Institute of Capital Markets Research based on data from the National Bureau of Statistics of China.

Third, because many investment projects targeted by the economic stimulus measures were unprofitable and/or created excess capacity, the investment efficiency of the overall economy is deteriorating. Reflecting this, while the investment ratio (the ratio of capital formation to GDP) has risen significantly since 2009, the economic growth rate has declined. As a result, the marginal capital coefficient, which is the investment ratio divided by the economic growth rate, has risen sharply (Figure 14).

FIGURE 14: INVESTMENT RATIO, ECONOMIC GROWTH RATE, AND MARGINAL CAPITAL COEFFICIENT IN CHINA, 1991-2011



Note: Shaded area designates the period since the collapse of Lehman Brothers. The larger the marginal capital coefficient, the less efficient the investment.

Source: Compiled by Nomura Institute of Capital Markets Research based on data from the *China Statistics Abstract 2012* of the National Bureau of Statistics of China.

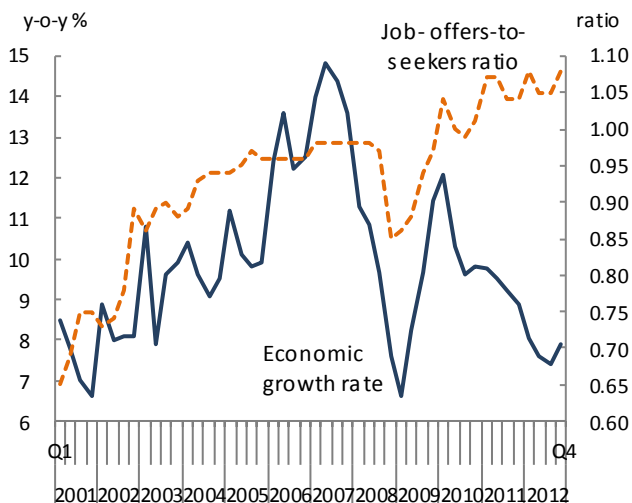
To avoid creating distortions similar to those that followed its post-Lehman stimulus, the government has remained cautious when using fiscal and monetary policy to boost the economy this time around.

LOWER POTENTIAL GROWTH RATE

The government has also come to recognize that, constrained by the supply of labor, China's medium-term potential growth rate might have fallen sharply. There have been clear signs suggesting that China's economy has arrived at the Lewisian turning point—the achievement of full employment in the development process with the drying up of excess labor in rural areas. Among these signs is the fact that employment conditions have not deteriorated despite the significant fall in the economic growth rate during the recent economic downturn. This situation contrasts sharply with the one that prevailed in the wake of the Lehman Brothers collapse, when demand for labor fell sharply. In the fourth quarter of 2008, for example, the job-offers-to-seekers ratio in urban areas plummeted to 0.85 (Figure 15). This ratio rebounded with the subsequent economic recovery, and it has remained at

a historically high level of over 1.0 even since the economy started to slow in 2010.

FIGURE 15: JOB-OFFERS-TO-SEEKERS RATIO DIVERGING FROM THE ECONOMIC GROWTH RATE



Note: The job-offers-to-seekers ratio in the urban areas of China is calculated by dividing the number of job offers by the number of job applicants registered in public employment service organizations in approximately 100 cities. It is based on "The Analysis on Supply and Demand of Labor Market in Some Cities" published quarterly by the China Labor Market Information Network Monitoring Center, which operates under the Ministry of Human Resources and Social Security.

Source: Compiled by Nomura Institute of Capital Markets Research based on data from the National Bureau of Statistics of China and the Ministry of Human Resources and Social Security.

Generally speaking, the more the actual GDP growth rate exceeds the potential growth rate, the tighter labor market conditions become and the higher the job-offers-to-seekers ratio rises. When the economic growth rate declines, as long as the potential growth rate remains unchanged, labor market conditions should ease, and the job-offers-to-seekers ratio should move lower. In fact, however, China's job-offers-to-seekers ratio has remained high even though economic growth has fallen substantially. This suggests that China's potential growth rate has fallen considerably from its past level, constrained by the shortage of labor associated with the arrival of the Lewisian turning point.

The good news is that the government does not need to worry about unemployment as it once did, but the bad news is that the era of double-digit growth might have gone forever. If the government insists on adopting an expansionary policy to maintain high growth, it may inadvertently rekindle inflation and the economic bubble.

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