BEIJING—Days after reporting its worst economic performance since the global financial crisis, China unleashed a one-two punch to prop up growth while also sweeping away a major control on how banks set deposit rates.

The country’s central bank combined a quarter-point cut in benchmark interest rates with a half-percentage reduction in banks’ reserve-requirement ratios,
moves aimed at lowering corporate financing costs and pumping liquidity into
the economy.

Friday’s moves marked the sixth time since November that the Chinese central
bank has cut interest rates and the fourth across-the-board reduction of the
amount of deposits banks are required to hold in reserve.

China is the latest of the world’s big economies to turn to its central bank to
stimulate flagging growth. The Federal Reserve, with rates already near zero,
expanded its holdings of government and mortgage bonds through last year to
push down long-term interest rates. Now it is grappling with the timing to raise
short-term rates.

China’s announcement came one day after European Central Bank chief Mario
Draghi signaled the ECB could do more to stoke growth and inflation in the
eurozone as early as December.

The actions helped extend a global rally in stocks for a second day. The Dow
Jones Industrial Average climbed 158 points to a three-month high of 17646.70,
erasing a long losing streak that began with China’s surprise devaluation of its
currency Aug. 11. The S&P 500 swung into positive territory for the year for the
first time since August.

In a statement posted on the central bank’s website late Friday, the People’s
Bank of China attributed the measures to what it said was downward pressure
on the country’s economy. Beijing is fighting a host of economic ills that have put
at risk its goal of achieving growth of about 7% for the year.

Investors cheered the prospect of expanded easy-money policies by the world’s
central banks, snapping up risky assets such as stocks while paring back on safer
Treasurys. The yield on the 10-year note rose to 2.081% from 2.025% on
Thursday.

China’s latest action “reduces the probability of some of the more dire
predictions” about a slowdown in the world’s second-largest economy, said
Aaron Kohli, interest-rate strategist at BMO Capital Markets.

But there were also signs of investor skepticism. Offshore trading in China's
currency, whose value is controlled by China's central bank on the mainland,
indicated that investors were betting on a further devaluation of yuan. The yuan
in Hong Kong slumped to a nearly one-month low against the dollar.
Along with the moves easing rates, China took a crucial step toward overhauling its creaky banking system by removing caps on deposit rates, illustrating a persistent dilemma for the country's economic stewards.

Broad credit-easing risks funneling money into unproductive parts of the economy, such as heavily indebted state-owned companies and inefficient sectors. To help solve that problem, the PBOC will now allow banks to set deposit rates more freely. The central bank thus intends to create greater competition among lenders, which could in turn steer money toward areas that need it most, such as small and private businesses.

Abolishing the ceiling on deposit rates would also help lift the income that ordinary households earn on their savings—seen as critical to China's efforts to transition to an economy driven by consumption. But it also brings considerable risk: A scramble for deposits could destabilize the banking sector.

As a result, China's central bank said in its statement that it will continue to manage rates, as officials seek to control lending risks and put a lid on borrowing costs.

Other central banks, including the Fed, the ECB and Bank of Japan, pushed rates down and started their own bond-purchase programs, known as quantitative easing, in response to their domestic economic troubles. The ECB is now contemplating expanding its bond program.

Despite these efforts, growth and inflation have lagged, pointing to the limits of monetary policy to jump-start economies with problems that can’t be resolved by easy credit alone.

For all the Chinese central bank's maneuvering over the past year, the country's economy has shown few signs of regaining its previous strength. On Monday, China said third-quarter growth was 6.9%, compared with a year ago. The pace was 7.0% in the second quarter.

While third-quarter growth was at the high end of estimates, raising eyebrows among economists as other data had indicated a sharper deceleration, it marked the slowest rate of expansion since the beginning of 2009, at the height of the global financial crisis. The performance adds pressure on Beijing to pile on further pro-growth measures to meet its full-year growth target.

Until this summer, it had been rare for the PBOC simultaneously to lower interest rates and banks’ reserve requirements. The central bank made such a
combination move also in late August, amid a severe selloff of Chinese stocks and growing worries over China's economy following a surprise currency devaluation.

“Taking such a rare action again means the real economy is performing poorly,” said a senior official at the PBOC. “A lot of companies have seen their profitability falling sharply and that’s a key reason why we took the action again today.”

Profits at Chinese industrial companies plunged 8.8% in August from a year earlier, latest data show, the biggest monthly fall since 2011. Coal-mining companies, as well as oil and metal producers—industries notorious for having excess capacity—were among those that suffered the worst declines.

Economists say liberalizing interest rates and getting more capital to private companies that employ large numbers of workers are crucial to securing future growth. Beijing eased controls over lending rates in July 2013, though that move has made little difference to companies’ borrowing costs.

By loosening controls on deposit rates now, the government is attempting to inject market competition into a politically powerful state-run banking sector that has favored big state companies over a more dynamic private sector.

The measure likely will further hurt the profitability of Chinese banks already grappling with rising bad-debt levels. Still, the central bank was able to overcome considerable opposition from the banking industry to push through the reform, according to people with knowledge of the matter, as it convinced the leadership that China needed to take the step to get the International
Monetary Fund to include the Chinese yuan in its elite basket of reserve currencies when the IMF board votes on the issue next month.

Senior leaders including President Xi Jinping are eager to see the yuan enjoy the same reserve-currency status as the dollar, the euro, the British pound and the Japanese yen. They see that as elevating China’s role in the global financial system even though it might not benefit the Chinese economy in any meaningful way in the short run.

In recent weeks, Beijing has been stepping up efforts to win reserve-currency status for the yuan. It has allowed foreign central banks to invest in China’s bond and currency markets and is planning to extend trading hours for the Chinese currency within China.

Eliminating the deposit-rate ceiling “removes one of the last remaining hurdles to satisfying the technical criteria set by the IMF” for designation of the yuan as a reserve currency, said Eswar Prasad, a Cornell University professor and former IMF China head.

However, China still has a way to go before declaring full interest-rate liberalization, as the central bank will continue to guide banks over how much they charge borrowers and pay depositors. A completely market-based interest-rate system, central-bank officials fear, could lead to risky lending behavior and higher funding costs at a time many businesses already are having a hard time getting loans.

“It’s a big test to commercial banks now that they can decide on what rates to
charge and to pay on their own,” the PBOC senior official said. “Of course we’ll continue to provide window guidance to them.”

After the latest rate cuts, China’s benchmark one-year lending rate will be 4.35% and its one-year deposit rate will be 1.5%, effective Saturday. The reduction in banks’ reserve requirements—made to offset continued capital outflows—will pump about 680 billion yuan ($108 billion) worth of funds into China’s banking system, estimates Zhu Chaoping, China economist at UOB Kay Hian Holdings Ltd., a Singapore-based brokerage.

The barrage of easing measures since late last year has had some success in getting more credit flowing in the economy. Chinese banks issued 1.05 trillion yuan of new loans last month, the highest on record. However, as credit continues to expand while growth slows, China risks a further buildup in debt. An analysis by consultancy McKinsey & Co. shows that China’s debt load increased to 282% of GDP last year from 158% in 2007.

Still, companies’ borrowing costs remain elevated, and bankers say they have had no choice but to charge more, given the heightened risks in a slowing economy. “Banks’ funding costs are rising fast, and they have to pass them on to their customers,” said a senior executive at Shanghai Rural Commercial Bank.

—Grace Zhu in Beijing, Jon Hilsenrath in Washington and Min Zeng in New York contributed to this article.

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