

China Macro View

Estimating Implicit Interest on Bank Deposits

- **Implicit interest a buffer to interest rate liberalization** – It is widely expected that the cost of funding in the banking sector would rise after financial deregulation. This is necessary to rebalance the Chinese economy and a natural consequence of improved credit allocation efficiency. The implicit interest embedded in the regulated deposit market, however, makes the cost increase only proportional. Assuming the market-based 1 year real deposit rate should mark up by 3 ppts from current level, the cost of funding facing commercial banks may only pop up by 1.65 ppts or 55%. International experience suggests that the average NIM post-liberalization had actually risen, though with widened standard deviation.
- **Estimated implicit interest** – In an environment with deposit ceiling, banks tend to maximize their profits through adjusting implicit interest, i.e., the hidden cost of funding. Based on the bank level data in 2002-2011, the estimated implicit interest for Chinese banks is 1.21% on average, or about 82.9% of the interest payment per unit of deposit. This is far higher than the estimated level of 0.34-0.58% for US banks in the 1970s. The 4 largest state-owned banks, other share-holding banks, and rural commercial banks pay implicit interest of 1.5%, 1.06% and 0.84%, respectively.
- **The substitution effect** – The interest rate liberalization and thus higher explicit interest could be substituted partially by implicit interest. It's estimated that 1 ppt hike of the base deposit rate could lead to a 0.45 ppt drop of implicit interest. This roughly implies that implicit interest could disappear in theory if the base deposit rate is hiked by 3 ppts after interest rate deregulation.
- **The possible cost of funding after liberalization** – The financial market appears to have already anticipated full deposit rate liberalization in the near term. The weighted average yield of wealth management products was 2.5 ppts higher than the 1 year deposit rate in late 2013, roughly in line with international practice after financial liberalization. This gap could be narrowed gradually, implying around 3-3.5% real deposit rate for 1-year term (i.e., approximately 3 ppts up from the current level), alongside the completion of interest rate liberalization which could take place within the term of the current government.

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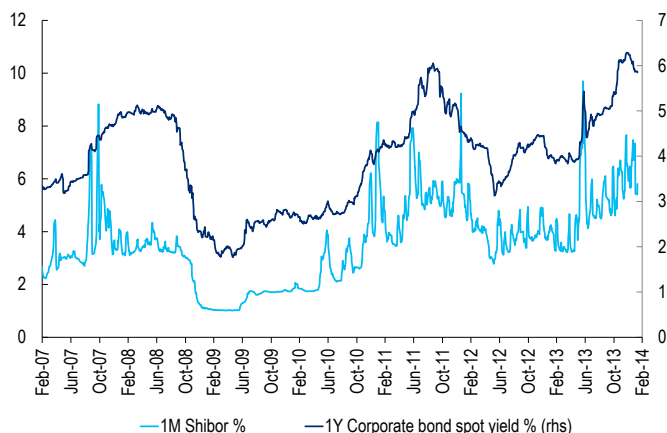
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Interest rate liberalization lies in the core of China's financial liberalization and thus rebalancing effort. After the lending rate liberalization in July 2013, we believe it is natural to expect deposit rates to be deregulated in an orderly manner. In June 2012, the PBOC allowed deposit rates to float up by 10% from the base rates set by the central bank. In Dec 2013, the negotiable certificate of deposits was introduced to allow more flexibility in pricing the cost of funding in the banking sector. More measures to further deregulate deposit rates are expected going forward and deposit rates could be fully liberalized before the end of the current government in 2018.

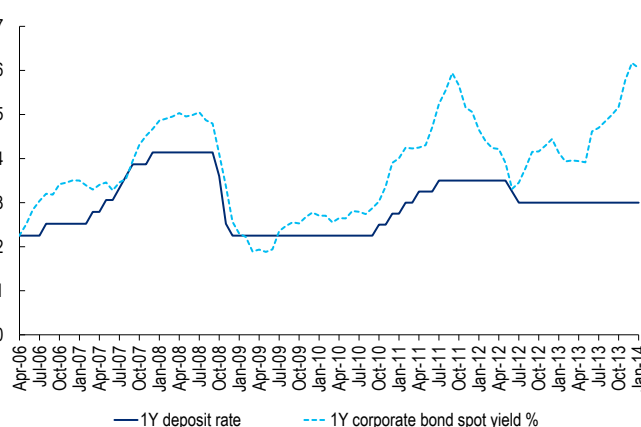
The financial market appears to have largely priced in the expectation of deposit rate liberalization in the near future. The money market rates had surged since 2H 2013. The 1 month Shibor rose to above 4% recently and the 1 year corporate bond yield surged to above 6% (Figure 1) and doubled the level of 1 year deposit rate in a low inflation environment (Figure 2). The rising cost of capital was partly affected by cyclical factors including Feb tapering and expectation of CPI rebound, and partly driven by structural factors including the rising risk premium, credit dislocation and expectation of deposit rate liberalization.

Figure 1. Rising cost of funding since 2H 2013



Source: WIND and Citi Research

Figure 2. 1 year corporate bond yield vs. 1 year deposit rates



Source: WIND and Citi Research

International experience suggests that interest rate liberalization implies high cost of capital in the real economy. Investors generally expect similar impacts in China. However, the fact that there exists sizable *implicit interest* when deposit rates are regulated could make the Chinese picture a bit different from international practices when it comes to the cost of funding in the banking sector. In this note, we try to estimate the implicit interest paid by commercial banks on top of the official interest, and then assess the impact on the cost of funding post liberalization.

Implicit interest: Empirical evidence¹

In an environment with deposit ceiling, banks tend to maximize its profit through adjusting implicit interest, or the hidden cost of funding. This occurred not only in emerging markets, but also in the developed world when interest rates were regulated. Typical hidden costs are gifting, kick-backs, and other pecuniary benefits to depositors.

¹ The empirical estimation in this note is drawn from the Chinese Working Paper, "Regulated Interest Rate and Implicit Interest Estimation," coauthored by Yan Shen, Wenlong Bian, Zhong Xu and Minggao Shen, The State Development School, Peking University, 2014.

Figure 3. 2002-2011 financial institutions business operations (per unit of deposit)

Institution type	Numbers	Business revenue	Operating expenses	Interest expenses	Business profit	Interest expenses / operating expenses
Big 4 state-owned banks	33	3.32	3.01	1.50	0.31	49.83
Other share-holding commercial banks	400	4.20	3.55	1.40	0.65	40.00
Rural commercial banks and Rural cooperative banks	66	4.26	3.54	1.81	0.72	50.85
Total	499	4.15	3.50	1.46	0.65	41.13

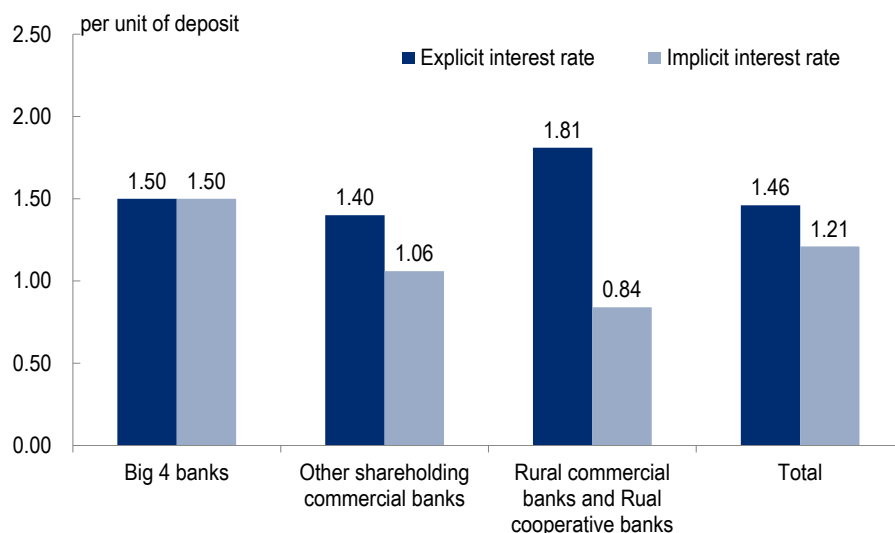
Source: "Regulated Interest Rate and Implicit Interest Estimation," coauthored by Yan Shen, Wenlong Bian, Zhong Xu and Minggao Shen, The State Development School, Peking University, 2014, and Citi Research

In order to estimate the implicit interest, we need to separate it from observable cost. Normally, a bank's operating cost includes two parts, interest and noninterest expenses. Supposedly, implicit interest is part of the noninterest expense. Econometrically, we are able to isolate implicit interest based on what are known, e.g., noninterest expense, income per unit of loan, loan-to-deposit ratio, and official deposit rate. More importantly, in order to mimic the reality, it assumes that implicit interests are correlated among different banks. The empirical estimation is based on 2002-2011 data of 63 commercial banks from the Bankscope Database (Figure 3).

The estimates suggest that the average implicit interest in the banking sector is 1.21% (Figure 4). This is 82.9% of interest payment per unit of deposit. Here we assume that implicit interest did not change over time. This is possible as there was no significant measure of interest rate liberalization taken during 2002-2011. The difference of the estimate is negligible when the 2002-2009 data was used instead.

The results also show that 4 state-owned banks were charging higher implicit interest than their smaller peers. Due to insufficient data, we cannot distinguish between demand deposit and term deposit, but we are able to break down commercial banks into three sub-groups, 4 largest state-owned banks, other share-holding banks, and rural commercial banks. The implicit interest rates for these three sub-groups are 1.5%, 1.06% and 0.84%, respectively. The fact that 4 state-owned banks paid higher implicit interest is a bit surprising. Their large networking could help attract more deposits but possibly with a higher operating cost.

Figure 4. Explicit and implicit interest rates per unit of deposit



Source: "Regulated Interest Rate and Implicit Interest Estimation," coauthored by Yan Shen, Wenlong Bian, Zhong Xu and Minggao Shen, The State Development School, Peking University, 2014, and Citi Research

The substitution effect

The estimated implicit interest in China is higher than that in the US. Early studies in the US indicate that the average implicit interest for US Savings and Loans Associations was 0.19-0.37%, or about 20% of the noninterest expense. Another more broad study concluded that the average implicit interest was 0.34-0.58% for US banks.² This is much smaller than our estimation of 1.21% for Chinese banks. The gap could be explained by the fact that Chinese banks were lately facing more restrictive interest rate regulation than their US counterparts in the 1970s.

The experiences from 50 countries (14 developed and 36 emerging market economies) suggest that financial liberalization would generally deliver: (1) higher real interest rates, in line with the fact that more capital was allocated toward more productive and higher return projects; (2) lower investment, but (3) not necessarily lower GDP growth again due to efficiency gains.³

International experiences proved that the cost of funding would rise after financial liberalization. More countries had gone through the financial liberalization after the mid-1980s, and thus real deposit rates in emerging markets had become positive and converged to that in the developed world, and meanwhile, the unsecured NIMs also expanded probably at the cost of increased volatility and widened standard deviation (Figure 5). A separated investigation had also confirmed the same trend (Figure 6).

Figure 5. The change of real deposit rates and NIMs in the 1970s-1990s (% ppts)

	Deposit		Lending less deposit	
	Developed	Emerging	Developed	Emerging
1975-77	-2.8	-4.2	2.8	4.1
1980-82	0.1	-2.3	4.1	4.6
1985-87	3.2	1.5	4.4	5.0
1990-92	3.3	2.5	5.1	6.7
1995-96	1.8	3.5	4.0	6.6

Source: "How Interest Rates Changed under Financial Liberalization: A Cross-Country Review," by Patrick Honohan, Development Research Group, and Citi Research

Figure 6. The change of real lending rate before and after financial liberalization

Country Groups	Before	After
All countries	1.58	7.73
Developed	0.43	6.27
Emerging	1.98	8.83

Source: "Before and After Financial Liberalization," by Carmen Reinhart and Ioannis Tokatlidis, 2005, University of Maryland, and Citi Research

Higher cost of funding reflects not only more balanced credit demand and supply, and efficient use of credit, but also the rising risk premium. This is more so in emerging market economies including China when banks are implicitly guaranteed by the government. Interest rate liberalization alongside financial sector deregulation (e.g., entry of privately owned banks and deposit insurance) could mean even higher risky interest rates.

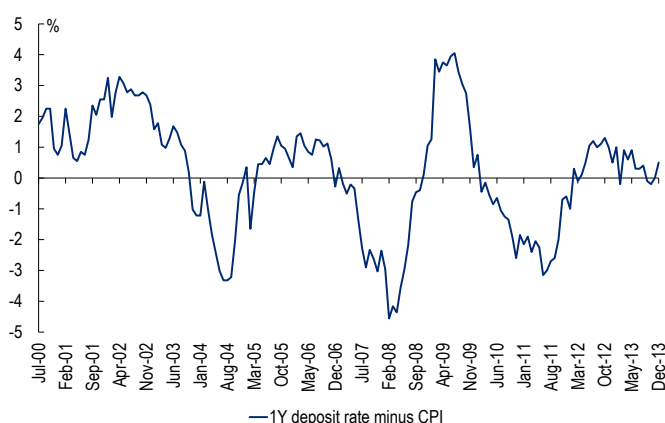
² See, for example, "Implicit Interest on Demand Deposit," by R. Startz, 1978, Working Paper: 4-79.

³ See "Before and After Financial Liberalization," by Carmen Reinhart and Ioannis Tokatlidis, 2005, University of Maryland.

Further analysis suggests that interest rate liberalization and thus higher cost of funding could be a substitute for implicit interest. In China, a 1 ppt hike of the base deposit rate could lead to 0.45 ppt drop of implicit interest. This roughly says that implicit interest could largely disappear if the base deposit rate is hiked by 3 ppts. Of course, in reality, implicit interest may exist even after financial liberalization but it should be compressed significantly.

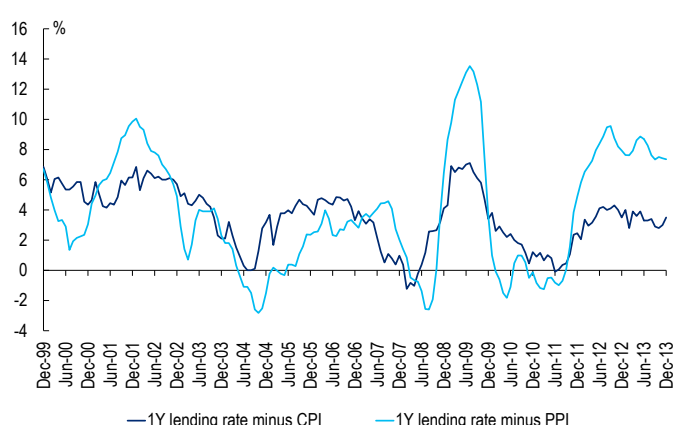
The current cost of funding in China would be low if deflated by CPI inflation. The 1 year deposit rate was merely zero on average in recent years (Figure 7). However, if based on PPI, the manufacturing sector was around 8%, nearly record high capital cost since 1999 (Figure 8). Looking at the wealth management products and lending activities in the shadow banking sector, the overall cost of funding in China could have already be marked up by another 2-4 ppts, very close to the international practice discussed above.

Figure 7. China's real deposit rates



Source: CEIC and Citi Research

Figure 8. China's real lending rates



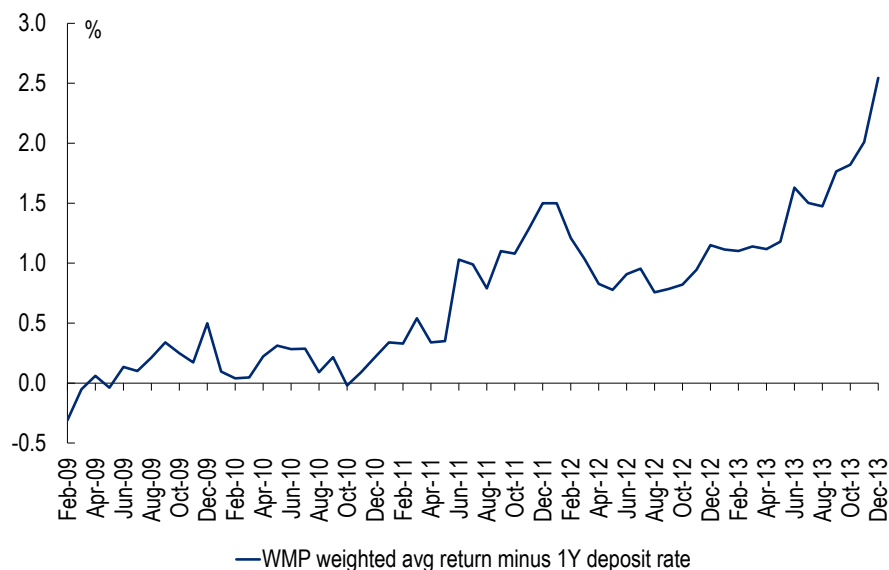
Source: CEIC and Citi Research

Market implications

Deposit rate liberalization will very likely cement a high cost of funding in the banking sector. But this impact is almost fully factored in by the market, in our view. The spread between the weighted average yield of WMPs and 1 year deposit rate hit the record high of around 2.5 ppts by the end of 2013 (Figure 9). The actual WMP yield is already in line with the international practice after financial liberalization if measured in real terms. Deposit rate liberalization may narrow this gap gradually, implying around 3-3.5% 1-year deposit rate in real terms, approximately 3 ppts up from current level. In order to contain the negative impact on GDP growth, this process may only take place gradually and complete by the end of the term of the current government.

The impact on the cost of funding in the banking sector should be proportionally less once implicit interest is considered. If the empirical estimation in this note is correct, about 45% of cost increase should be offset by the cut of implicit interest. The real impact on NIMs depends on how much of the remainder could be passed onto borrowers. The actual NIMs should not necessarily be squeezed if future credit is allocated to more efficient projects and thus are able to afford a high cost of capital. This, of course, does not rule out bank failures. Product and service differentiation, and prudential liquidity and risk management shall determine who should survive and who should vanish going forward.

Figure 9. The spread between the weighted average yield of WMPs and 1 year deposit rate hit record high by the end of 2013



Source: CEIC and Citi Research

Implicit interest helps ease the shock of deposit rate liberalization on the cost of funding in the banking sector, but the subsequent higher cost of capital in the real economy would still be negative to GDP growth unless credit allocation efficiency improves simultaneously. Deposit rate liberalization should take place orderly to deter speculation in the financial market. SOE reform, restraining the government's visible hand in intervening commercial decisions, and imposing hard budget constraints on market participants should all follow immediately.

In the near term, the impact of high cost of capital on the real economy should be assessed. Firstly, whether the new projects started in 1Q would decline; Secondly, whether the rising financial burden would choke re-stocking activities; Thirdly, whether transaction volume and investment in the real estate sector would weaken. If these factors turn against the GDP growth, we would expect policy easing in late 1Q or early 2Q to pull down the cost of capital.

Appendix A-1

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