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Why does the spread between LIBOR and expected future policy rates persist, and should central banks do something about it?

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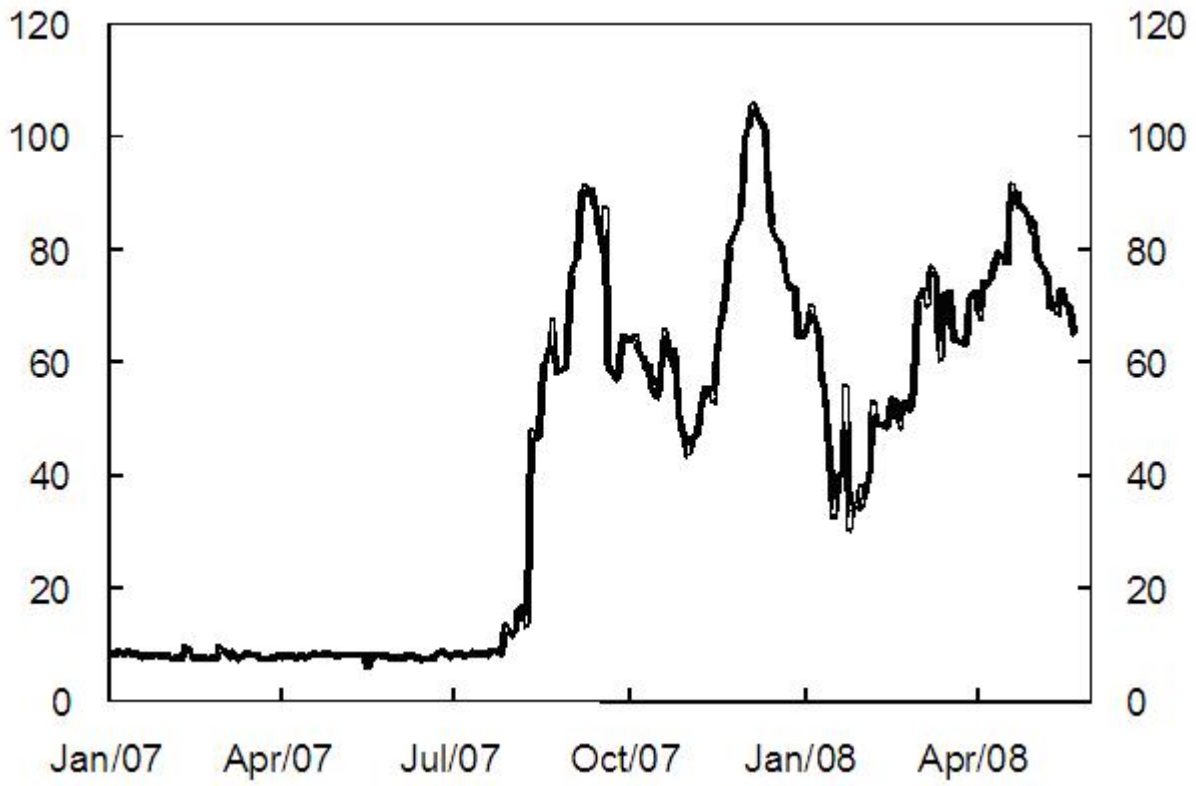
3 June 2008

There has been a persistent spread between the rate at which banks lend each other money and government-backed securities yields in recent months. This column describes hypotheses explaining the spread – including the possibility that banks aren't lending in order to bankrupt acquisition targets.

For a few months now the markets have been concerned by the persistence of a spread between the 1- and 3-month LIBOR ("London Interbank Offer Rate" – the interest rate at which banks lend money to each other without posting collateral) and the comparable overnight index swap rates (OIS), i.e. future expected policy rates (the Federal Funds rate in the U.S. and similar rates in the U.K and in the euro area) over the same horizon.[1] The persistence of such a spread is surprising because banks should in principle be able to arbitrage it away – up to the cost of the insurance they need to buy if they want to protect themselves against future fluctuations in policy rates. To arbitrage, they simply need to borrow overnight on the money market – for instance at the Federal Funds rate – roll over the funds for three months and use them to lend to another bank at LIBOR.

Until summer 2007, the spread between LIBOR and future expected policy rates was very small, about 10 basis points – which probably reflected the cost of insurance. Since then, it has fluctuated between 50 and 100 basis points in various markets, including the U.S. dollar, British pound, and euro. Today the spread is about 70-75 basis points. See Figure 1, which shows a time series of the spread for the U.S. dollar since January 2007.

Figure 1 LIBOR-OIS spread, U.S. Dollar, 2007-2008 (basis points)



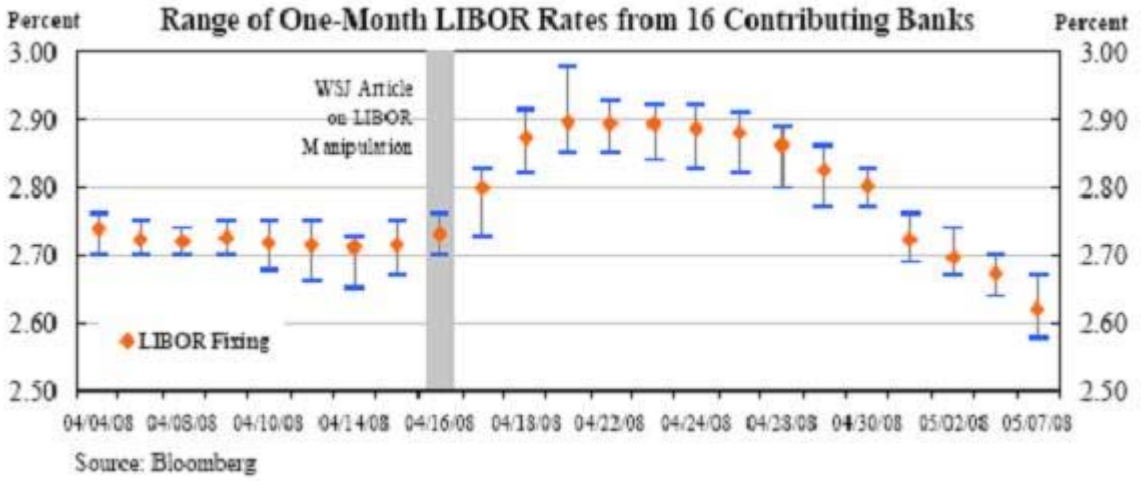
A European view

There are two views as to why such a spread persists and whether central banks might reduce it. Europeans tend to think that the spread reflects credit risk, as LIBOR loans are not collateralised. Since there remains widespread uncertainty about the strength of banks' balance sheets, LIBOR loans are risky and the spread simply reflects the market assessment of such risk. Assuming that this is the reason, European central bankers think that it would be inappropriate for them to try to eliminate a "market price". Thus we should live with it. It has been suggested that this explains why the European Central Bank and Bank of England have very reluctantly followed the Federal Reserve in announcing the swap lines created among the three central banks (in early May) to make it possible for Euro area and U.K. banks to borrow overnight dollars – and symmetrically for U.S banks to borrow pounds and euros. The Fed proposed these swaps – which are in effect credit lines – to try and bring the spread down; the Europeans thought this was inappropriate, or in any case useless.

We can compute the market's assessment of the probability that a loan may not be reimbursed, i.e. that the bank fails and completely foregoes its obligations – admittedly an extreme case, since a fraction of the loans is typically repaid. In the Euro area, with (annualised) overnight rates at 4%, a 50 basis point (bp) spread implies (assuming risk neutrality, which may not be right) a default probability of about 5% over a three-month loan. When the spread was 80 bp (as in December 2007), the default probability was 7.5%. In the U.S., with the Fed Funds at 2%, a 50 bp spread implies a default probability of about 10%. In both cases, these are not small numbers.

A problem with the "European" view is that if the LIBOR reflected the

creditworthiness of banks, spreads should vary across banks depending on the perceived state of their balance sheets. This does not appear to be the case. Figure 3 shows that the range of LIBOR rates for 16 reporting banks is rather small: 10 basis points, hardly a reflection of a market characterised by widespread credit concerns.



Source: William C. Dudley, "May You Live in Interesting Times: The Sequel," Remarks at the Federal Reserve Bank of Chicago's 44th Annual Conference on Bank Structure and Competition, 15 May 2008

An American view

The Fed seems to hold a different view, which starts from the presumption that after the Bear Stearns episode it is very unlikely that a U.S bank will be allowed to fail – and that even if it did the Fed would intervene to protect bondholders (including the banks that lent to the failed institution at LIBOR) and shift the loss entirely onto shareholders. The Fed suggests instead that what underlies the spread is a "shortage of bank capital".

Consider a bank that has enough capital: it can borrow and make a new loan without with the capital it has, without going beyond its target level of leverage. In other words, the shadow price of its capital is zero. Such a bank will arbitrage between LIBOR r^{Libor} and the expected cost of rolling over overnight funds $\hat{r}^{OIS}$ and insuring against fluctuations in the overnight rate.

$$r^{Libor} - (\hat{r}^{OIS} + \text{insurance premium}) = 0$$

Consider instead a bank that, in order to make a new loan, must raise new capital, or reduce the capital it has assigned to other activities. For such a bank the spread between the lending rate and the cost of borrowing must equal the shadow price of capital.[2]

$$r^{Libor} - (\hat{r}^{OIS} + \text{insurance premium}) = \text{shadow price of capital}$$

For instance, with a capital requirement, under current Basel rules, of 1.6% and a shadow price of capital of 20% (what many banks are promising to attract new investors), the spread between LIBOR and the overnight rate (net of the insurance

premium) is 32 bp. Before the crisis the insurance premium was around 10 bp: it may have risen considering the increase in volatility. This gives an overall spread of 42 bp and possibly more, depending on the current level of the premium. This explains some of the divergence from historical levels, but it is far from the peaks observed during the crisis.

This view has an additional problem. It requires that *all* banks are capital constrained. This is unlikely to be true, and just a few unconstrained banks could arbitrage away the spread. For this to happen, however, the unconstrained banks should be large relative to the market. Otherwise, as they lend at Libor, they will also eventually hit a capital constraint.

Predatory banks

The bottom line is that both the European and the Fed's view have problems. An interesting alternative explanation has been suggested by MIT's Ricardo Caballero. Banks could be engaging in "predatory behaviour". Banks that have "free" capital might be tempted to behave strategically and refrain from lending to banks which need the funds to overcome a liquidity crisis. Here is how the argument goes.

Since we cannot assume that the Fed will bail out all banks in trouble, it is possible that a liquidity crisis might result in a bank failing. The experience of Bear Stearns then suggests that, faced with a possible failure, the Fed would protect bondholders but wipe out shareholders. This means – as in the Bear Stearns-JPMorgan case – that the bank with "free" capital can acquire a competitor to which it has denied a loan at a price close to zero. Predatory behaviour could explain the persistence of the spread even in the presence of a few large banks that are not capital constrained.

Finally let's come to central banks and what they can do to reduce the spread. The simplest option would eliminate the need for banks to borrow at LIBOR from other banks by providing the funds they need directly through the Term Auction Facility (TAF). The facility (created earlier this year) allows a bank to borrow reserves from the Fed by posting assets (of any quality) as collateral. Currently the TAF is a 28-day facility. To pursue this route and make it equivalent to borrowing at LIBOR, the Fed might need to extend the horizon of the TAF from 28 to 90 days. (The ECB and the Bank of England have similar facilities.) One remaining difference is the need to post collateral, which is a requirement to access the TAF, while no collateral is needed in the case of interbank borrowing. But since the Fed accepts almost any asset as collateral, this would not be a serious constraint.

Saving banks

There remains an underlying problem. How credible is the Fed's commitment to supply funds to banks through the TAF – even in the case of a liquidity crisis that might bring a bank down – *without affecting the monetary base?* This question has often been raised in recent months as markets worried what might happen when

the Fed "runs out of TBills".

There are three ways in which the Fed could expand its balance sheet without affecting the outstanding stock of base money: (i) if it were allowed to issue its own Bills (as some other central banks do, e.g. the People's Bank of China), (ii) if it could induce banks to hold more reserves for any given level of the monetary base, (iii) if the Treasury were to issue more Bills than it needs to finance the deficit and the Fed bought them back from the market. Option (iii) is straightforward: however it is not unlimited, unless Congress raises the yearly limit of Treasury issues. Options (i) and (ii) are related but only (i) would put the Fed in the position of issuing an unlimited amount of Bills to buy banks' paper. To compare options (i) and (ii), it is useful to consider their implications on the Fed's balance sheet.

(i)	Assets	Liabilities	(ii)	Assets	Liabilities
	TBills	M		TBills	M
	FedBills ↑	Reserves		Banks' paper ↑	Reserves
	Banks' papers ↑				

It is unclear whether today the Fed has the authority to issue its own Bills, and the Fed hopes that the law currently being discussed in Congress that would allow it to pay (starting in October 2011) interest on reserves might contain a line that explicitly authorises the Fed to issue its own Bills.

Options (i) and (ii) are obviously very different. If the Fed could issue its own paper, its ability to expand its balance sheet would be unlimited – and its commitment to bail out any bank without affecting *M* would be fully credible. Inducing banks to increase their reserves is much less powerful. If we compare the balance sheet of the Fed with that of the ECB (which pays interest on reserves) we see that this could add some $100 billion to the liabilities side: not small but not unlimited either. Moreover, banks can certainly be induced to hold a higher volume of reserves if these are remunerated, but in order to do so – at an unchanged level of base money – banks must liquidate other assets. This would happen but only with time.

Conclusion

The two competing views about why a Libor-OIS spread persists – credit risk or a shortage of bank capital – both have problems. The possibility that banks with still abundant capital might be engaging in predatory behaviour seems a better explanation for the persistence of the spread. Central banks, particularly the Federal Reserve, in principle have the power to get rid of the spread: they could simply eliminate the need for banks to borrow at LIBOR from other banks and provide

them the funds they need directly through the Term Auction Facility. This leaves us with a final basic question: can central banks credibly commit to provide unlimited high quality paper to banks without affecting the monetary base? In the U.S. case such a commitment would require Congress to explicitly authorise the Fed to issue its own bills.

Footnotes

1 This column is the result of conversations with Olivier Blanchard, Ricardo Caballero and Steve Cecchetti – who of course are not responsible for what is written here.

2 Here too, knowing the marginal capital requirement needed to make a new LIBOR loan, we could compute the equilibrium spread.

Topics: Financial markets

Tags: ECB, Federal Reserve, LIBOR

Comments