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## Lessons from LIBOR

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August 3, 2012

*farmdoc daily* (2):149

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Recommended citation format: Peterson, P. "[Lessons from LIBOR](#)." *farmdoc daily* (2):149, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, August 3, 2012.

Permalink: <http://farmdocdaily.illinois.edu/2012/08/lessons-from-libor.html>

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The London Inter-Bank Offered Rate (LIBOR) is a measure of the interest rates at which major banks borrow funds from other major banks in the London market. Rates are calculated and published daily for 15 different maturities ranging from overnight to 12 months, denominated in 10 different currencies. Of these 150 different interest rates, the 3-Month US Dollar rate is the most widely followed.

Over the past several weeks there has been a flood of news reports on efforts by participating banks to manipulate or otherwise distort various LIBOR rates. At least one bank so far has admitted guilt and several others are reportedly trying to negotiate a plea bargain with regulators. Beyond the potential impact these activities may have had on interest rates, it is worthwhile to review the LIBOR affair in the context of prices paid and received by agricultural producers.

A close examination reveals a number of structural weaknesses in the LIBOR process. One problem is that LIBOR is based on estimates, not actual transactions. In a transaction, the buyer tries to get the lowest possible price, the seller tries to get the highest possible price, and the economic interests of both parties are reflected in the price when the deal is finally struck. This is why transactions are considered the "gold standard" for prices and other types of market data. However, LIBOR reflects "offers" – for example, the rate quoted by Bank B to lend funds to Bank A.

The quotes submitted by each bank are publicly available, based on the belief that transparency will help discourage any shenanigans. However, the borrowing banks – Bank A in the example above – are the ones that submit the interest rates used for the survey. These quoted rates also reflect the creditworthiness of the borrowing bank, with higher rates charged to weaker, riskier banks. Therefore, a less creditworthy bank has an incentive to put a downward bias on the rates they report, to give the appearance of being more financially solid than they actually are. The problem is compounded when weaker banks submit borrowing rates that are below those of stronger banks. This puts the stronger banks that are reporting honestly at a competitive disadvantage. This gives the stronger banks an incentive to also under-report the interest rates on their borrowings, and soon the survey degenerates into a race to the bottom.

But the problems don't end there. In the LIBOR survey, traders are asked the following question:

"At what rate could you borrow funds, were you to do so by asking for and then accepting

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inter-bank offers in a reasonable market size just prior to 11 am?”

When conducting a survey, the answer received often depends on how the question is asked, and the LIBOR question allows for considerable wiggle-room in the answer. Notice that it doesn't ask “At what rate did you borrow funds just prior to 11 am?” but rather “At what rate could you borrow funds, were you to do so, just prior to 11 am?” Similarly, the reference to “reasonable market size” is designed to reflect the quantity of funds borrowed – the interest rate to borrow \$1 billion presumably should be higher than the rate to borrow \$1 million, everything else being the same – but what is “reasonable” to one bank might be unreasonably large or small to another.

Once the quotes are compiled, LIBOR uses a trimmed mean process, in which the highest and lowest values are thrown out and the remaining values are averaged. This is sometimes called an “Olympic average” from its use in the Olympics to eliminate the impact of a biased judge on an athlete's final score. In the case of the 3-Month US Dollar LIBOR, the four highest and four lowest rates are eliminated, with the remaining 10 quotes used to calculate the average. Eliminating the top four and bottom four quotes would be effective if there are no more than four entities with a desire to distort the average. But when all 18 banks in the survey have an incentive to report an artificially low rate, eliminating only the bottom four quotes will do little to deter manipulation.

The amount of borrowing and lending of US dollar-based funds for a 3-month term among the 18 participating banks – in other words, the actual volume of transactions underlying the LIBOR rate – is unknown, but it is likely in the tens or low hundreds of billions of dollars annually. However, the greatest impact occurs from this scandal comes from the indirect or “one-off” use of LIBOR rates to value other financial transactions. These indirect uses dwarf the volume of actual transactions: one estimate puts the amount of investments pegged to the 3-Month US Dollar LIBOR rate at \$800 trillion. These indirect users who piggy-backed on transactions conducted by others are the ones who complained the loudest and longest when the distortions in the LIBOR rates were revealed.

What does all this have to do with agricultural producers? As it turns out, most prices paid and received by producers are based in some manner on “reference prices” established by someone else, not transactions in which they were direct participants and therefore contributed to the price discovery process. For example, crop prices are linked to futures prices, livestock prices are frequently tied to prices reported by USDA, and input prices are frequently based on some type of “sheet price” from a newsletter or trade publication. Some of these reference prices are quite robust and easily verified, while others are questionable at best.

When the number and size of transactions underling a reference price is relatively small, the potential for artificial distortions or other unexpected changes is much greater. Entering into any agreement to buy or sell without understanding exactly how the final price will be determined – and how the reference price is determined – can expose producers to unnecessary risks. Asking questions and doing some independent research can be useful in preventing unpleasant surprises.