



## Interest Rates and the Cost of Short-Term Borrowing

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In June, the Federal Reserve's Open Market Committee (FOMC) raised the interest rate on overnight deposits (the discount rate) 25 basis points to 1.75%, mirroring similar rate increases in March 2017 and December 2016. The [long-run expectations](#) of FOMC members suggest that future rate hikes are expected. As interest rates move higher, farmers may see rising interest expenses on their operations ([farmdoc daily, February 17, 2017](#)). This article examines the relationship between the discount rate and the interest on farm operating loans.

### The Discount Rate and Interest Rates

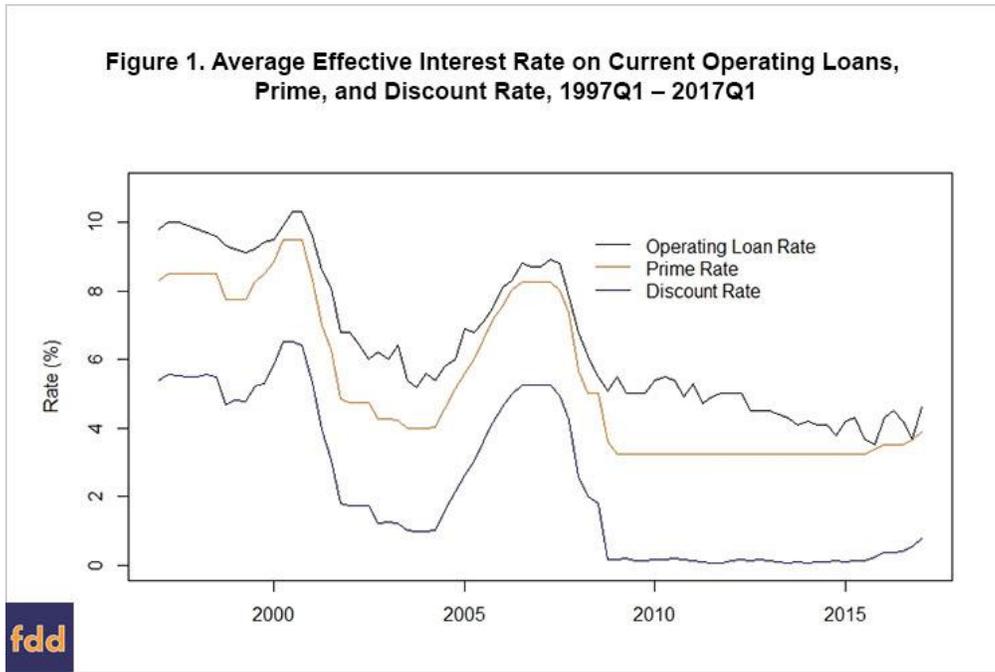
The discount rate is the interest rate the Federal Reserve charges depository institutions on overnight loans. As a result, the greatest impact of the discount rate can be found at the lower end of the [yield curve](#). That is, the discount rate most influences the interest rate for short-term lending. The interest rate on longer-term loans, on the other hand, are determined by broader supply and demand conditions. And as a result, changes in the discount rate are not expected to impact interest rates on longer-term loans or farmland mortgage rates ([farmdoc daily, December 20, 2016](#)).

However, the discount rate is one of the major determinants of a bank's "prime rate" – the rate charged to the most credit-worthy borrowers. The interest rate charged to borrowers is typically stated as a function of the prime rate, with riskier borrowers paying a greater premium above prime.

Figure 1 plots three interest rates: the discount rate, the prime rate, and the average interest for agricultural operating loans. The data are quarterly from 1997 quarter 1 through 2017 quarter 1. The [discount rate](#) and the [prime rate](#) are published by the [Federal Reserve Bank of St. Louis](#), and the interest rates on agricultural loans are published by the [Federal Reserve Bank of Kansas City](#). The agricultural loan rates are the average effective interest rate on non-real estate bank loans made to farmers classified as "other current operating expenses." In other words, the interest rate on loans primarily to finance current crop production expenses and the care and feeding of livestock. This average interest rate does not include loans to finance feeder livestock, other livestock, and farm machinery and equipment. The interest rates are based on a national survey, the Federal Reserve System's Survey of the Terms of Bank Lending to Farmers.

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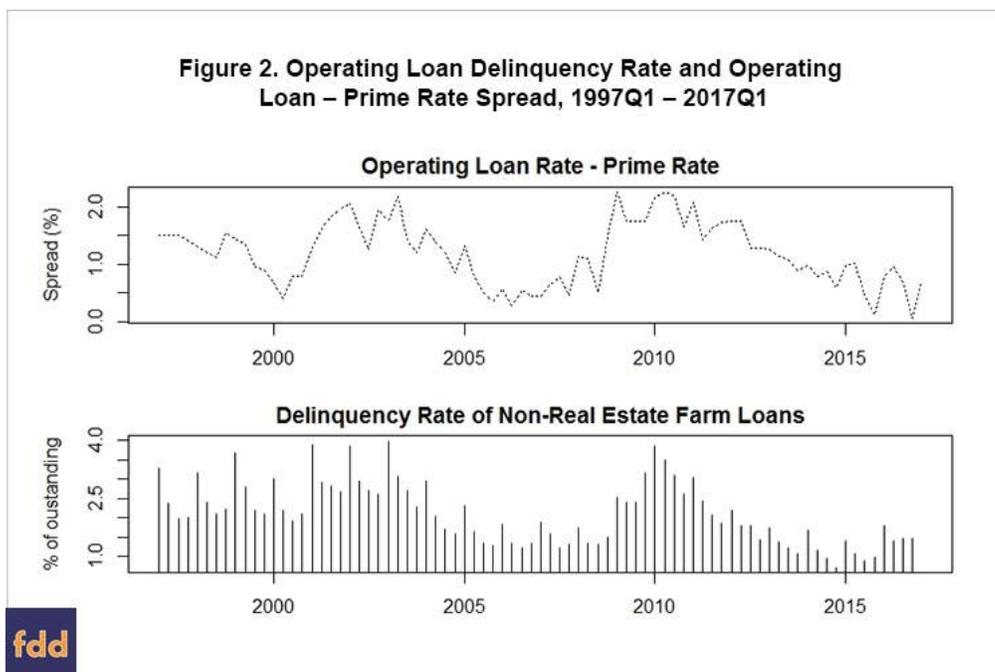
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As shown in Figure 1, the discount rate exhibits a distinct pattern over the last 20 years. While the discount rate has generally trended downward since the early 1980s, the Fed has periodically adjusted rates in response to broader economic conditions. For example, during recessionary periods, such as the early 2000s and the Great Recession, the Fed lowered the discount rate to encourage investment. The Fed maintained historic low discount rates from 2009 through the end of 2015.

Prime rates closely mirror discount rate movements throughout the period. The difference, or spread, between the discount rate (blue) and the prime rate (orange) captures the risk of lending money to the most qualified borrowers instead of leaving the money in deposit at the Federal Reserve. Between 1997 and 2017, this spread was relatively constant, at approximately three percentage points.

Agricultural production is inherently risky, and as a result, agricultural producers are typically charged a rate above prime. The spread between the prime rate (orange) and the operating loan rate (black) therefore reflects the lender's perceived risk of repayment. While the spread between operating loans and prime is generally positive, it fluctuates through time as the perceived riskiness of repayment changes.



The spread between operating loan and prime rates is plotted in the top panel of Figure 2. The bottom panel of Figure 2 plots the delinquency rate for outstanding farm production loans held by insured commercial banks (also published by the [Federal Reserve Bank of Kansas City](#)). The figure demonstrates that the spread is highly correlated with delinquency rates (71%). That is, as the delinquency rate for operating loans increases, the premium charged to agricultural loans also increases. Thus, the operating loan rate is a function of both the prime rate and the additional risks of lending to farms.

### **Short-Term Loan Rates are Expected to Increase**

In summary, as the Federal Reserve continues to increase the discount rate, prime rates are expected to increase. Farmers can presume additional upward pressure on borrowing costs related to the premiums charged on agricultural loans. Figure 2 demonstrates that delinquency rates on operating loans have increased steadily since the fourth quarter of 2014. As a result, lenders are likely to increase the spread between prime and operating loan rates to reflect the increasing risk in agricultural lending. Previous research has demonstrated that higher discount rates are associated with downward pressure on agricultural commodity prices ([farmdoc daily, December 11, 2015](#)), and falling revenues may lead to further increases in farm loan delinquencies.

It is important to note, however, that the Fed has continually stated that future rate increase will be modest and measured. As a result, farmers should be able to plan for the potential increases in the costs of borrowing.

### **References**

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