

A Reprint from *Tierra Grande*

## *Mortgage Rate and Inflation: An Intimate Relationship*

By M.A. Anari and Mark G. Dotzour

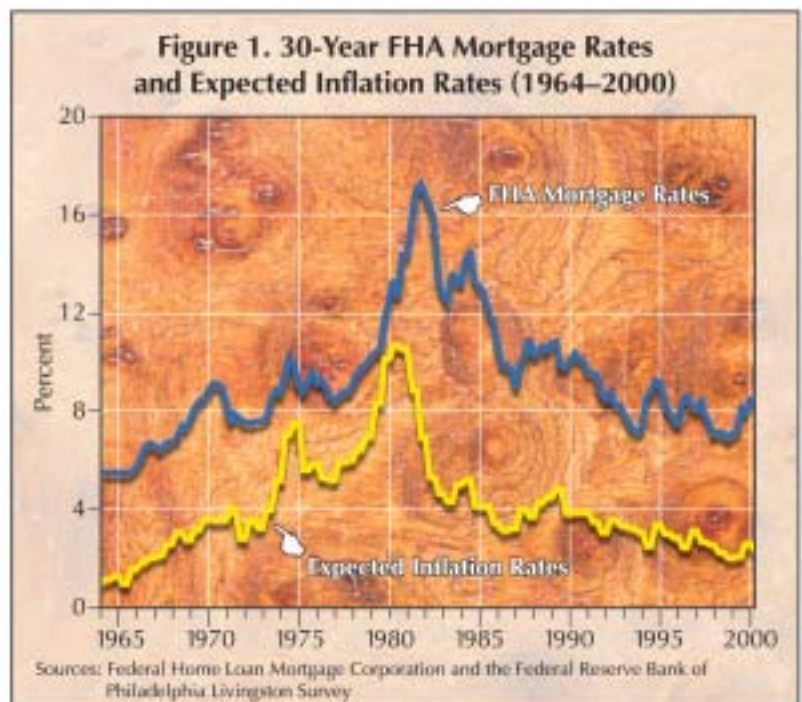
When talk around the watercooler focuses on the link between mortgage rates and inflation, listen up. The relationship isn't just a rumor, and real estate professionals need to know all they can about it.

The mortgage rate, which constitutes the major cost of owning real estate, drives demand for real property. The rate is based on three components: the real riskless interest rate, the expected inflation rate and risk premiums. Of these, the expected inflation rate is the key determinant.

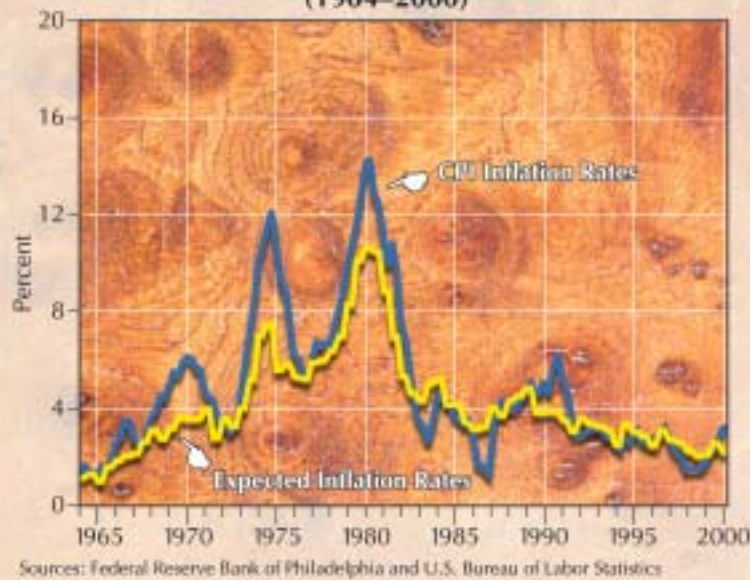
Figure 1 shows conventional 30-year FHA mortgage rates and expected inflation rates from January 1964 to June 2000. The figure shows past changes in the mortgage rate have been closely associated with changes in the expected inflation rate. That pattern will continue.

### What is Inflation?

Inflation is the continual increase in prices of goods and services produced in an economy. Short-run causes of inflation are grouped into two classes: those resulting from changes in *demand* for goods and services (demand-



**Figure 2. Inflation Rates from Consumer Price Index (CPI) and Expected Inflation Rates from Livingston Survey (1964–2000)**



pull inflation), and those resulting from changes in *supply* (cost-push inflation). In the long run, inflation is caused by the rate of growth of the money supply exceeding the rate of growth in gross national product.

Demand-pull inflation occurs when demand for goods and services exceeds supply. Increases in demand may be the result of increases in consumer spending, business investment, government expenditures and net exports (exports minus imports). Excess demand causes an increase in the prices of goods and services in the short run. After an adjustment period, the excess demand disappears, and prices fall because the supply of goods and services increases.

Cost-push inflation occurs when either the unit cost of goods or sales taxes are increased and the producers pass along these increases to consumers. Increases in unit costs may be the result of higher wage rates, costs of material or energy or anything else used in producing goods and services. One of the worst forms of cost-push inflation is the wage-price spiral, which occurs when

## Inflation Retrospective

From January 1960 to January 1964, the average U.S. annual inflation rate was less than 1.3 percent. Excessive spending growth from 1966 to 1969 for the Vietnam War and social programs in an economy constrained by its productive capacity increased the average annual inflation rate to 3.1 percent from 1965 to 1970. Higher expected inflation rates led to higher wage rate contracts, and the wage-price spiral pushed inflation to 5 percent in first quarter 1970 as labor productivity grew far less than wage rates.

The Nixon Administration's price control program from 1971 to 1974 temporarily reduced inflation from 5 percent in first quarter 1970 to 3.6 percent in first quarter 1973. However, the controls failed to reduce inflation permanently, and when they were terminated, inflation climbed to 5.9 percent.

The acceleration in inflation was exacerbated by the first major oil price shock at the end of 1973. The price of West Texas intermediate crude oil increased from \$3.56 per barrel in July 1973 to \$10.11 per barrel in the aftermath of the Arab oil embargo. In fourth quarter 1974, the U.S. inflation rate climbed to 12.2 percent.

The second oil price increase came in the aftermath of the 1979 Iranian revolution. The price of West Texas intermediate crude climbed to \$39.50 per barrel in July 1980. The U.S. inflation rate exceeded 14.4 percent in second quarter 1980 and the real interest rate (interest rate minus inflation rate) became negative. Mortgage rates reached a historic high of 18 percent.

Prior to October 1979, the Federal Reserve Board's monetary policy was to maintain the federal funds rate within a "zone of tolerance." This contributed to the destabilization of the economy by increasing the real money supply when the economy was strong and reducing monetary growth when the economy was weak.

The Fed changed its policy to controlling the money supply by setting target zones for the supply. This policy could have worked if economic growth had remained stable as it did during the 1980s. But instability in money demand resulting from the financial deregulation of the 1980s generated overly volatile monetary growth, coupled with high interest rates.

The average annual inflation rate from first quarter 1980 to first quarter 1982 increased to 9.4 percent. The Fed abandoned its policy of maintaining the money supply within target zones in October 1982. Since then, the Fed has been able to control inflation by skillfully managing the Fed funds rate and money supply growth rates.

After a recession in 1982, the U.S. economy embarked on a long expansion that lasted until June 1990. The expansion was stimulated by a sharp drop in interest rates that fueled expenditures by consumers as well as businesses. Consumer spending was further boosted by the Reagan tax cuts.

On the supply side, the expansion was helped by falling oil prices. In the first half of the 1980s, energy consumption per dollar of gross domestic product decreased sharply thanks to more efficient use of energy. Higher oil prices resulted in increased oil supplies from North Sea oil producers, notably the United Kingdom and Norway, and from Mexico. By April 1986, the price of West Texas intermediate crude oil fell to \$12.84 per barrel.

When the economy expands, people need more money to spend. Money supply growth rates during the economic expansion of 1982–1990 were managed to meet the growing demand for money without fueling inflation. The expansion was followed by a short-lived recession from July 1990 to March 1991. The U.S. economy then experienced its longest period of economic expansion, which began in April 1991 and ended in 2001.

higher wages lead to higher prices and higher expected inflation rates lead to higher wages.

Writing in 1930, economist Irving Fisher asserted that there is a one-to-one relationship between expected inflation and mortgage rates, and that a 1 percent (100 basis points) increase in the expected inflation rate will increase the interest rate by 1 percent. This relationship becomes apparent over long periods.

Forecast errors can occur in estimating expected inflation rates in the short run (Figures 1 and 2). Fisher found it could take several decades for the effects of inflation to be fully reflected in interest rates.

## Mortgage Lending Risks

When lenders loan funds to the federal government by purchasing U.S. Treasury bills, notes and bonds, they are guaranteed the return of the principal at the end of the contract period. Accordingly, the rate of interest they receive is referred to as the riskless interest rate.

But mortgage lenders incur risks different from those incurred by investors in Treasury securities. Because of this, mortgage rates include premiums for inflation risk, interest rate risk, credit (default) risk, maturity risk, liquidity risk, prepayment risk and reinvestment risk.

Inflation risk reflects the average inflation rate expected over the life of the loan. Because mortgage loans are normally long-term, expected inflation is the most important component of mortgage rates.

Interest rate risk occurs because fluctuations in market interest rate affect the value of mortgage loan investments. When interest rates rise, the value of fixed-rate mortgage loan investments falls. Variable-rate mortgages are adjusted when interest rates rise or fall, but the adjustment is not immediate.

Credit (default) risk refers to the possibility that borrowers will fail to pay the loan principal and interest when due. Since 1983, the default rate on mortgages has generally increased. During the 1991–1992 recession, foreclosure rates climbed to 1 percent of one-to-four family residential nonfarm mortgage loans. However, the risk of default on home mortgages is low overall.

Maturity risk is associated with loan term. The longer the loan period, the more the uncertainty associated with that investment. To compensate, investors expect higher returns on longer maturity debts. Liquidity risk refers to the difficulty of converting a loan investment to cash.



*BECAUSE MOST MORTGAGE LOANS are long-term, the expected inflation rate is the most important determinant of the interest rates consumers must pay.*

Mortgage lenders are exposed to prepayment risk because the law allows homeowners to prepay the principal balances on their mortgages without penalty. Prepayment shortens the life of the mortgage and exposes lenders to reinvestment risk because lenders must find new investment opportunities for the prepaid mortgage funds. When interest rates fall, homeowners pay off high-rate mortgages by refinancing. The mortgage holder must then reinvest that money, typically at a lower rate.

## Expected Inflation

There are three sources of information about expected inflation rates. The Livingston Survey is the oldest continuous survey of expectations about a number of important macroeconomic variables, including the expected consumer price index and the producer price index. It was initiated by the late columnist Joseph Livingston in 1946.

Since 1990, the Federal Reserve Bank of Philadelphia has assumed responsibility for the Livingston survey ([www.phil.frb.org/econ/liv/](http://www.phil.frb.org/econ/liv/)), which is compiled semiannually. The Philadelphia Fed also conducts a survey of professional forecasters who produce forecasts of a number of key economic variables, including inflation rates.

The University of Michigan Survey of expected inflation (<http://athena.sca.isr.umich.edu/scripts/mine/mine.asp>) is compiled monthly and is available from January 1978.

The association between the expected inflation rate and mortgage rates points to the wisdom of inflation watching. Monitoring inflation should give real estate professionals a hint of where mortgage rates are headed. 📌

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