

on long-term bonds or money market instruments, will generally cause prices of outstanding debt securities to increase. Conversely, rising rates across a particular maturity spectrum will generally cause the prices of outstanding debt securities of that maturity to decline.

**EXAMPLE:** A 30-year Treasury bond pays interest at a 12% coupon rate. The only time prior to maturity that investors will pay a price of 100 (that is, 100% of par value) for the bond is when the prevailing yield on such long-term Treasury bonds is exactly 12%. Should rates move higher to, say, 14% for such Treasury bonds, the price of an outstanding 12% bond would have to decline to about 86 in order for the bond to yield 14%. If rates on such bonds subsequently decline to 10%, the price of the 12% bond could be expected to rise substantially above par, since it would yield 10% at a price of 120.

Price-based call options become more valuable as the prices of the underlying debt securities increase, and price-based puts become more valuable as the prices of the underlying debt securities decline. The relationship between interest rate changes, prices, and the value of price-based debt options can be expressed as follows:

Interest Rates (Yields) ↓ = Prices ↑ = Call ↑  
Put ↓  
Interest Rates (Yields) ↑ = Prices ↓ = Call ↓  
Put ↑

In contrast, the exercise settlement value of a yield-based option is based on the difference between the value of an underlying yield and the exercise price of the option. Since the underlying yields of yield-based options will increase as interest rates increase, and vice-versa, it follows that yield-based calls become more valuable as yields rise (i.e., as the prices of the debt securities from which the underlying yield is derived decline), and puts become more valuable as yields decline (and prices of such securities increase). These relationships can be expressed as follows:

Interest Rates (Yields) ↓ = Prices ↑ = Call ↓  
Put ↑  
Interest Rates (Yields) ↑ = Prices ↓ = Call ↑  
Put ↓