

## Inflation

The current economic crisis has prompted many of Clifton's clients to express interest in trading inflation. Defined broadly, inflation is the general rise in price levels for goods and services in an economy over a period of time. Despite its simple premise, calculating a universal measure of inflation for an economy is difficult and many competing measures exist. In the U.S., the Consumer Price Index (CPI) is one of the most widely quoted and referenced inflation measures. The index measures the change in price of a fixed basket of products and services that an average individual might consume. The components of the basket are food and beverages, housing, apparel, transportation, medical care, recreation, education and communication, and other goods and services. The index is quoted both as "Headline" CPI, which measures the price change of the entire basket, and as "Core" CPI, which excludes the highly volatile food and energy components of the basket. The economic crisis has stoked concerns that the current environment of low and stable inflation will soon end and a period of either high inflation or deflation will emerge. Listed below are three broadly defined strategies that enable investors to profit in either scenario by gaining or reducing exposure to inflation.

### Nominal Treasuries

The simplest way to trade inflation is through nominal Treasuries. The nominal interest rate is a combination of the real interest rate plus the anticipated future inflation rate (although not explicitly defined by the CPI). A long position in nominal Treasuries is effectively a short position in real interest rates and a short position in inflation. If nominal rates rise, either through increasing real rates, increasing inflation or some combination of the two, nominal prices will fall and the investor will suffer an economic loss. Benefits of trading nominals as a proxy for inflation include ease of trading, high liquidity, transparent pricing and the ability to gain or reduce exposure in both funded and unfunded forms. Additionally, options on nominal rates are available if a non-linear payout is desired. The primary drawback of this strategy is the inability to hedge the real interest rate exposure and target CPI inflation directly. The correlation between ten-year nominal rates and ten-year TIPS implied CPI inflation has been 76% over the past five years. Although nominal rates have been highly correlated with inflation in the past, real rate volatility has also contributed to changes in the nominal rate. An investor using this strategy must accept a significant amount of basis risk since nominal rates and CPI inflation may move differently. However, due to the ease at which the exposure is gained, this can be an attractive way to trade inflation.

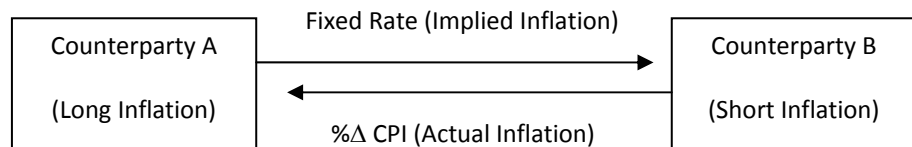
## TIPS

A long position in TIPS is effectively a long position in CPI inflation and a short position in real rates. If real rates remain static but inflation increases, the principal value of the TIPS position increases and the long investor profits in nominal terms. If real rates rise and inflation remains constant, prices will fall and the investor will suffer an economic loss. Like nominals, TIPS are easy to trade, liquid (although slightly less so than nominals), transparent and can be traded in funded and unfunded forms. In addition, an investor can isolate inflation by offsetting the TIPS position with a corresponding duration neutral nominal Treasury position. The real rates cancel out and the investor is left with pure CPI inflation exposure. However, fully neutralizing the real interest rate by perfectly matching the real interest rate duration of the TIPS with the duration of the nominal Treasury is difficult. Additionally, the hedge ratio is dynamic and requires adjustments over time. As a result, an investor still takes considerable basis risk with this strategy despite the potential for isolating inflation directly.

## Zero Coupon Inflation swaps

Zero coupon (ZC) inflation swaps allow investors to trade inflation directly without the need for hedging real rate exposure. The swaps are structured to exchange a fixed rate for the percentage change in inflation as measured by CPI over a defined period. At inception, if traded at par, the fixed rate

represents the expected annualized inflation rate over the term of the trade. If inflation meets expectations, the inflation



payment and the fixed payment cancel out and the trade has no value to either party. If, at maturity, annualized CPI increased by a greater percentage than the fixed rate, the investor who is long inflation receives a net payment from the counterparty. The key advantage of this strategy is it provides direct and pure exposure to CPI inflation without the need for hedging. However, ZC inflation swaps suffer from several disadvantages over trading nominals or TIPS. Implied inflation in the inflation swap market is typically higher than implied inflation in the TIPS market. This difference occurs primarily because the demand to receive inflation has historically outstripped the demand to pay inflation in the ZC inflation swap market and dealers must hedge that exposure in the TIPS market. As a result, it is generally more expensive to take a long inflation position in ZC inflation swaps than it is in TIPS. Additionally, unlike trading nominals or TIPS, ZC inflation swaps are only traded over-the-counter (OTC). Trading OTC requires specialized and often times expensive ISDA documentation and exposes the investor to counterparty risk. Both factors can add significant costs to implementing the strategy.

Each method listed here can be utilized to trade inflation with varying degrees of cost and specificity. ZC inflation swaps specifically target CPI inflation and are the most direct way to trade CPI inflation. However, they require potentially expensive OTC documentation, are generally less liquid than either nominals or TIPS and they can be expensive relative to TIPS. Nominals and TIPS are a simpler, lower cost, and more liquid alternative to ZC inflation swaps. However, since the investor also is exposed to real interest rates, the inflation payoff is much less certain. Ultimately, the balance between an investor's ability to take basis risk versus the costs of the trade will dictate the method to use.

	<b>Advantages</b>	<b>Disadvantages</b>
<b>Nominals</b>	<ul style="list-style-type: none"> <li>• Highly liquid</li> <li>• Transparent pricing</li> <li>• Ability to trade both in funded and unfunded form</li> </ul>	<ul style="list-style-type: none"> <li>• Not a pure inflation trade</li> <li>• Basis risk</li> </ul>
<b>TIPS</b>	<ul style="list-style-type: none"> <li>• Very good liquidity</li> <li>• Transparent pricing</li> <li>• Ability to trade both in funded and unfunded form</li> <li>• Ability to isolate CPI inflation directly</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to perfectly hedge real rate exposure and isolate CPI inflation</li> <li>• Basis risk</li> </ul>
<b>ZC Inflation Swaps</b>	<ul style="list-style-type: none"> <li>• Ability to isolate CPI inflation directly without hedging</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced liquidity</li> <li>• Historically expensive inflation relative to TIPS</li> <li>• Only traded in unfunded form in OTC market.</li> </ul>