Getting to the Core: Inflation Risks Within and Across Asset Classes

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Inflation is a key macroeconomic factor and a fundamental source of risk that drives asset returns. In addition, financial markets are highly sensitive to inflation news, as evident from the current behavior of financial markets in the face of rising inflationary pressures.

Against this backdrop, Professor Xiang Fang and Professor Yang Liu (HKU Business School, University of Hong Kong), and Professor Nikolai Roussanov (The Wharton School, University of Pennsylvania) presented their paper titled *Getting to the Core: Inflation Risks Within and Across Asset Classes* at the 9th Annual Conference of the Asian Bureau of Finance and Economic Research (ABFER).

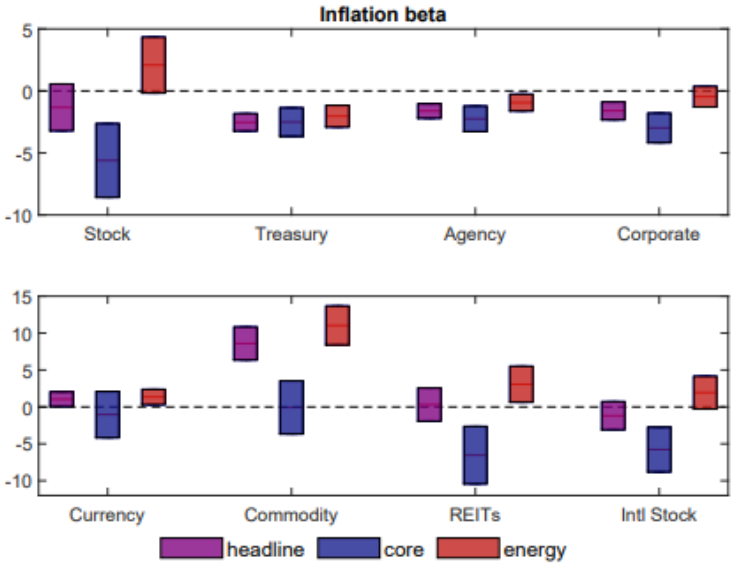
The authors study the inflation hedging properties of different asset classes and the price of inflation risks in the asset market. By decomposing inflation into core and non-core components (e.g., energy), the authors shed new light on the nature of inflation risk and risk premia.

Conventional wisdom holds that fixed-income securities incur losses in the face of inflation, but stocks, foreign currencies, commodities, and real estate maintain their values in real terms. However, the authors show that empirical evidence of such a risk premium has been elusive, as have the inflation-hedging properties of supposedly real assets, notably stocks.

The paper has produced three important findings. First, core and energy inflation series have sharply different statistical and economic properties. Second, inflation-hedging properties of conventional real assets, such as stocks, currencies, commodity futures, and real estate, are confined mainly to energy inflation; they provide almost no protection against core inflation risk. Third, core inflation carries a significantly negative price of risk, while the risk price associated with energy inflation is positive but indistinguishable from zero. Besides the main findings, the authors also explain why the correlation between stock and bond returns appears to switch signs in the data.

The authors examine the inflation-hedging properties of eight major asset classes: U.S. stocks, Treasury notes/bonds, agency bonds, corporate bonds, currencies, commodity futures, real estate investment trusts (REITs), and international stocks. Since investors often consider multi-asset-class allocations when managing inflation risks, this broad, cross-sectional analysis of eight major asset classes revealed important insights into the hedging properties of commonly used inflation hedges, as shown in the figure below.

Inflation Betas of 8 Asset Classes



The authors show that estimates of headline inflation betas confirm, to some extent, the conventional view on inflation hedging. Fixed income securities have negative headline inflation betas. In simple terms, it means that returns on fixed income assets and headline inflation have an inversely proportional relationship: an increase in headline inflation (CPI) would likely result in lower returns on fixed income assets.

At the same time, currencies, commodities, and REITs have positive headline inflation betas, while stocks' headline betas are mostly negative but often statistically insignificant. Put differently, returns on currencies, commodities, and REITs share a direct relationship with headline inflation while stock prices share an inverse, albeit statistically insignificant, relationship with headline inflation.

These estimates of headline inflation betas conform with the conventional view on the inflation-hedging abilities of these asset classes. However, things get interesting when headline inflation is decomposed into two main constituents: core and energy inflation. These eight asset classes' exposures to the two components are sharply different.

All stock and REIT portfolios have consistently significantly negative core betas and positive energy betas. In other words, conventional real assets of stocks, currencies, commodity futures, and REITs only hedge against energy inflation, but not against core inflation.

Furthermore, treasuries and agency bonds are negatively exposed to both core and energy inflation shocks, and corporate bonds have negative core betas and insignificant energy betas. The exposures of currencies and commodity futures to energy are positive, and those to core inflation are negative but insignificant.

Interestingly, only core inflation carries a negative premium and the magnitude is consistently estimated within and across asset classes.

In this way, the authors highlight that the conventional view mixes the two distinct components of inflation - core and energy - in a way that potentially obscures their effects on asset prices. For example, the stocks' insignificant headline betas are due to mixtures of negative core betas and positive energy betas. Similarly, currencies, commodities, and REITs, often considered inflation-hedging assets, only hedge against the energy inflation but not the core.

The authors then tackle the question of the cost of inflation hedging. How much return are investors willing to give up to hold inflation-hedging assets? The cost of inflation hedging, or the price of inflation risks, reflects investors' attitude toward inflation. The authors show that the price of headline inflation risk is around zero and insignificant, indicating that hedging against inflation is free. However, upon differentiating core from energy inflation, a different picture emerges. Core inflation carries a significantly negative price of risk, and the price of energy inflation risk is positive but indistinguishable from zero. In other words, hedging against core inflation is costly, while hedging against energy inflation is essentially free.

In addition, the authors shed light on why the correlation between bond and stock returns switches from positive to negative in the recent subsample. Before 1999, core inflation is relatively more important than energy inflation. As in, it contributes more to the headline inflation (CPI). Since both stocks and bonds have negative core betas, their correlation is positive. However, after 1999, energy inflation becomes dominant. Stocks have a positive beta with energy inflation while bonds have a negative beta with energy inflation. So, post-1999, the correlation between stock and bond returns turned negative; stock-bond returns would move in different directions to a given inflationary stimulus.

Lastly, leveraging their multi-asset-class setting, the authors estimate the price of inflation risks within each asset class. Strikingly, different asset classes imply a largely consistent cost of hedging against core inflation – but inconsistent costs of hedging against energy and headline inflation. ***Importantly, only core inflation carries a negative premium, and the magnitude is consistently estimated within and across asset classes***.