

# Treasury Inflation PCA Signal

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## 1 Introduction

This paper encompasses a series of signals that generated based on inflation measurements to trade treasury futures. In this case a signal is generated by decomposing two inflation based term structures and examining the spread. The motivation of this paper is that two inflation term structures which track similar or the same inflation rate should trade in-line with each other and that small dislocations will occur which can be harvested. Although a formalized approach likely exists and is worth developing at this time most of the work has focused on the signal analysis.

There may be some technical claims of the signal's ability to produce results but through some empirical evidence it will show the efficacy of this signal. Surprisingly the signal has high performance and consistent results across various sovereign bond futures. In this case due to data constraints this model is only applied to Treasury futures.

## 2 Signal Generation

First begin with two inflation based term structure in this case the Treasury breakeven term structure and the inflation swap term structure. These can be decomposed into their relevant  $k$  factor via PCA. Like most fixed income term structures they usually require at most 3 components.