The Entropy Pooling Approach: Incorporating Views on Forecast Distributions

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Abstract

An economic scenario generator can be described as a tool to simulate future scenarios of financial markets and provide a density forecast containing relevant macro-economic and financial variables used to make financial decisions. Economists are increasingly requiring the possibility to incorporate their own subjective views on the future market and in this thesis we study the entropy pooling approach, based on work laid out by Atillo Meucci, which allows views to be incorporated on general non-normal markets. The entropy pooling approach alter the forecast density to satisfy the views, while minimizing the change in the distribution, with regards to relative entropy.

We walk through the theoretical foundation of this method and present an analytical solution with the assumption of normality. However, without the assumption of normality we need to resort to a computational approach of the entropy pooling method. In the computational approach, the forecast density is represented by simulated sample points and the density is adjusted by assigning a weight to each sample point. The computational approach, however, causes a loss in convergence and we contribute to the current literature by proposing a method to obtain a small set of sample points, with increased convergence properties, which is useful in situations where significant computational limitations are present.

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