Heterogeneous Expectations with Multiple Risky Assets

Paolo Zeppini & Riccardo Sommariva

Groupe de Recherche en Droit, Econie, Gestion (GREDEG), Université Côte D'Azur, CNRS, France

Our aim is to develop and study an agent-based model of Heterogeneous Expectations to represent how and why extra correlations between assets can emerge from expectation dynamics. Our intuition stems from the observation of financial markets and trading strategies where agents use pricing rules based on (positive or negative) correlation between different risky assets, which in principle could create room for a non-fundamental/non-trivial component in the correlation of the same assets. We believe our contribution could be relevant considering that most of the existing literature on heterogeneous expectations mainly focuses on markets with only one risky asset, ignoring the dimension of the analysis where multiple risky assets and their correlations play a role in the dynamics of expectations and in the evolution of prices. We choose to adopt a modified version of Brock & Hommes (1997) model. By introducing a second risky asset we allow for the emergence of correlation dynamics in expectations about the future prices. Economic agents forecast the evolution of prices in each period by using different expectation rules, then evaluate their success (or lack thereof) to update their behaviour. The possibility of changing forecasting rules from period to period introduces a non-trivial component in the realization of next period prices that is partially affected by the "other asset" dynamics. We believe this framework is particularly well-suited because it is built to allow endogenous switching dynamics between different expectation rules and makes the analysis of the dynamics straightforward. This work will be composed by two main parts. The design of the model and its treatment, both analytical and numerical, and the empirical estimation with the purpose of testing the statistical significance of the coefficients governing the expected correlation between the two assets for different expectation rules.