The first chapter develops a model that describes the regularities of the revision process for real-time macroeconomic data. This model takes the typical publication process of statistical agencies into account: after an initial release, revisions are published in the following periods, as additional information comes in and measurement errors are corrected. Beyond the descriptive purpose of assessing the revision structure for a particular variable, the model can be used to derive confidence intervals that allow quantifying data uncertainty, and to predict future releases. An application to real-time GDP growth rates in the US and Germany demonstrates the usefulness of the model.

The second chapter proposes the use of dynamic factor models as an alternative to the VAR-based tools for the empirical validation of dynamic stochastic general equilibrium (DSGE) theories. The empirical illustration compares the out-of-sample forecasting performance of a simple RBC model augmented with a serially correlated noise component against several specifications belonging to classes of dynamic factor and VAR models. Although the performance of the RBC model is comparable to that of the reduced form models, a formal test of predictive accuracy reveals that the weak restrictions are more useful at forecasting than the strong behavioral assumptions imposed by the microfoundations in the model economy.

The third chapter investigates further the use and interpretation of general equilibrium models. Recent tendency in academic work and at central banks is to develop and estimate large DSGE models for policy analysis and forecasting. These models typically have many shocks. On the other hand, empirical studies point out that few large shocks are sufficient to capture the covariance structure of macro data. This chapter reconciles both views by considering an alternative DSGE estimation approach which models explicitly the statistical agency. This helps to distinguish whether the exogenous shocks in DSGE modelling are structural or instead serve the purpose of fitting the data in presence of misspecification and measurement problems. When applied to the model developed by Smets and Wouters for US data, it is found that the explanatory power of the structural shocks decreases at high frequencies. Thus, it becomes possible to back out a smoother measure of the natural output gap than that resulting from the original specification.