

The Macroeconomic Model Comparison Initiative (MMCI) and: The Macroeconomic Model Data Base 2.3 (MMB)



Motivation

Quantitative macroeconomic models play an important role in informing policy makers about the consequences of monetary, fiscal and macroprudential policies. However, systematic model comparison is rarely done and replication is hindered due to the lack in methods and norms. By creating a platform which simplifies replication and promotes model comparison, the search for robust policy rules shall be facilitated. Against this background, macroeconomists will be in a stronger position to inform policy makers about policy strategies which are robust to model uncertainty.

About the Initiative

The Macroeconomic Model Comparison Initiative (MMCI) is a joint project of the Hoover Institution at Stanford University and the Institute for Monetary and Financial Stability (IMFS) at Goethe University Frankfurt. Financial support is granted by the Alfred P. Sloan Foundation.

The CEPR Network on Macroeconomic Modeling and Model Comparison (MMCN) is part of the MMCI and aims at promoting collaboration among interested researchers in academia and policy institutions.

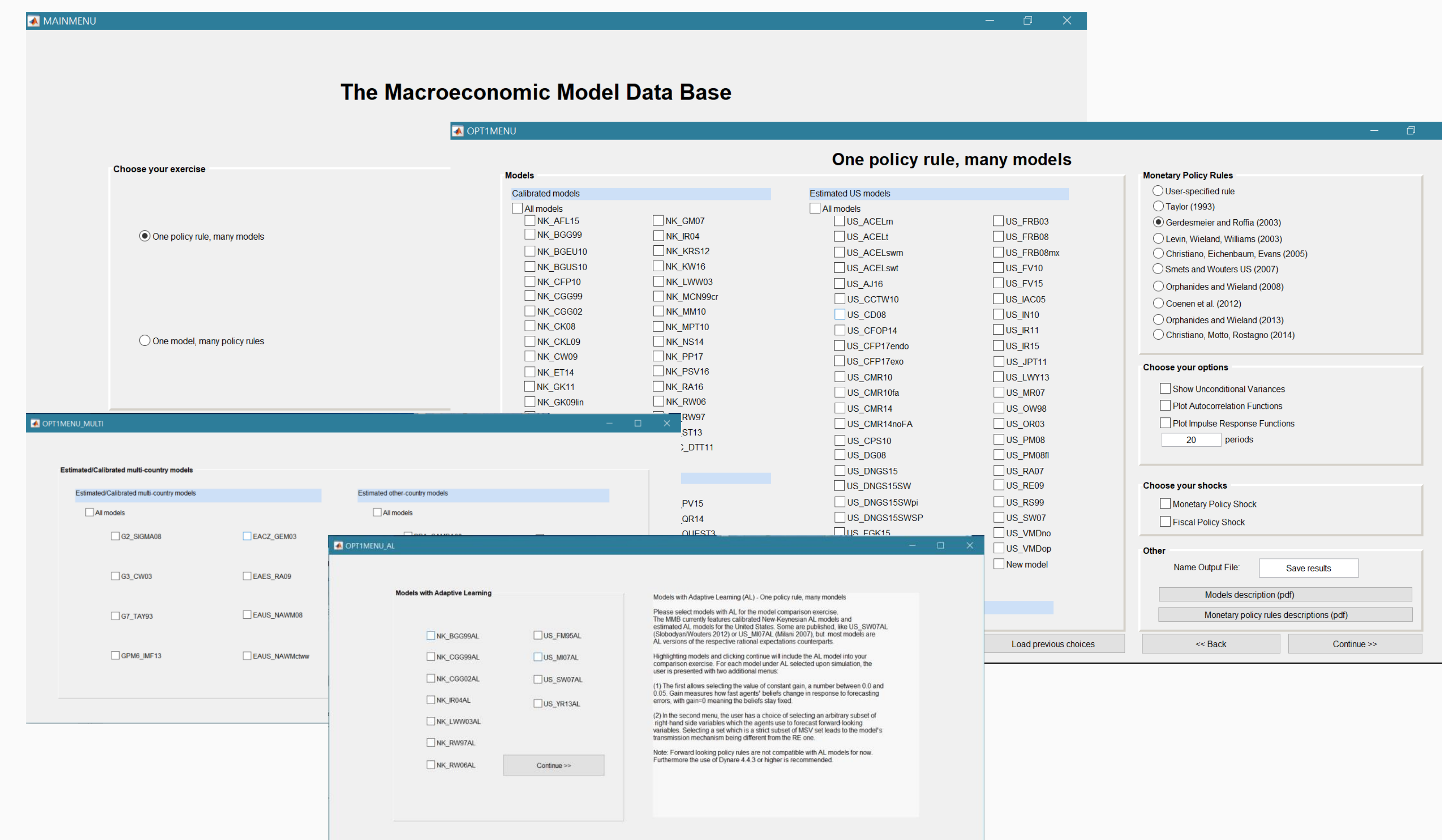
Goals

The project's goal is to change how research on structural macroeconomic modeling for monetary, fiscal and macroprudential policy analysis is conducted by:

- **Making research more reproducible:**
 - Motivate researchers to integrate relevant new models into the Macroeconomic Model Data Base (MMB), a public archive (render it self-expanding)
 - Inform about reproducibility problems
- **Making it more comparative in nature:**
 - Re-coding of MMB to utilize only open-source scientific software
- **Increasing collaboration:**
 - Providing interactive online-platform
 - Expanding the network of researchers interested in systematic model comparison to contribute to policy applications

New Release of the Macroeconomic Model Data Base: MMB 2.3

The interface for MMB 2.3 is easy and efficient to operate. The user can set key simulation parameters to compute and compare important model and policy characteristics. The new interface is also flexible (allows the user to go back or to load previous choices) and informative (backed up with easily accessible models, policy rules, descriptions, and guides).

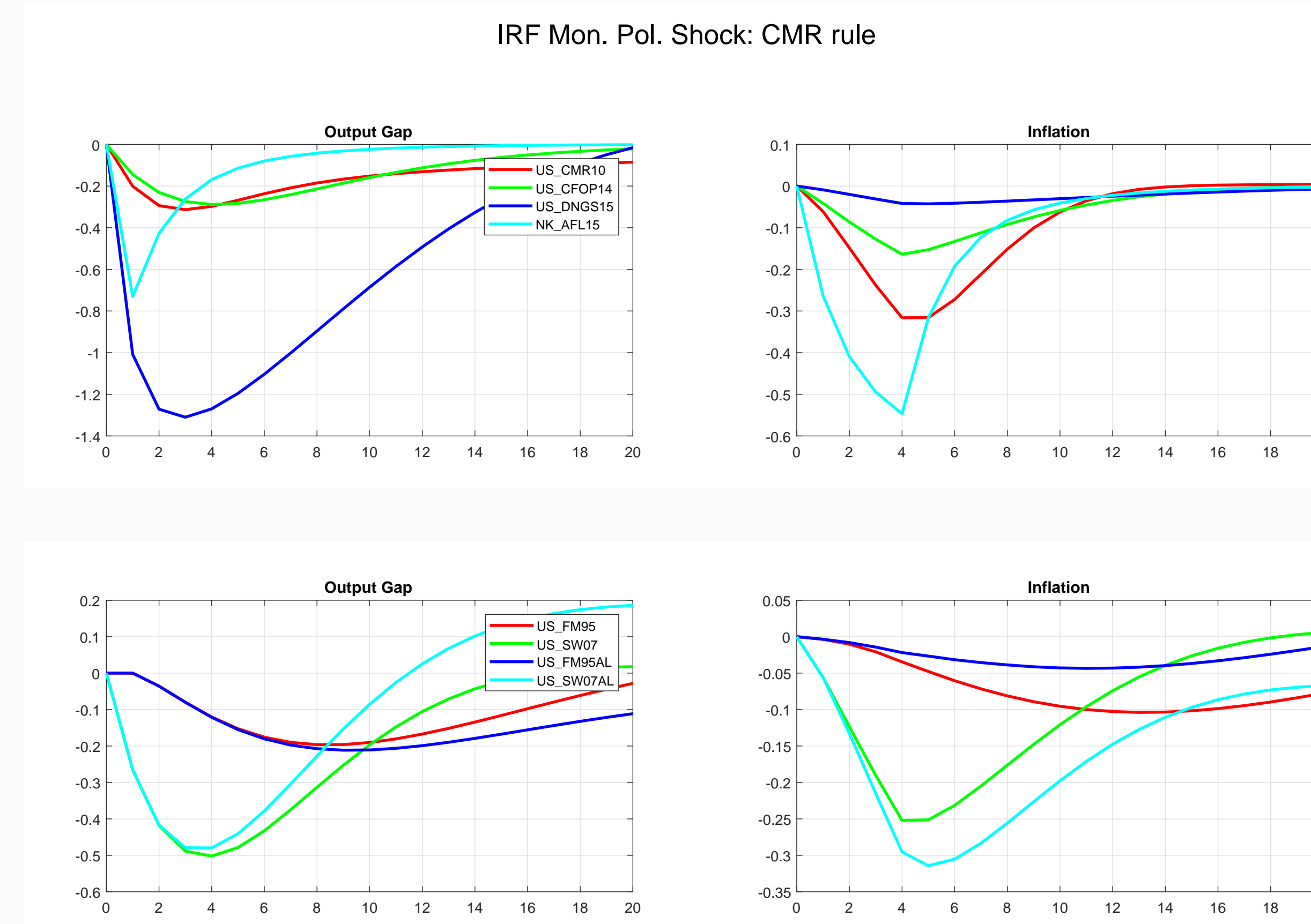


Policy analysis and comparison of new models with MMB 2.3

Under the *one policy rule, many models* feature, one can conduct model comparison and analysis for a particular monetary policy rule. An example is given in the figure on the right, depicting the responses of the output gap and annual inflation to a monetary policy shock in several estimated US models and a calibrated New Keynesian model, under the Christiano, Motto, Rostagno (2014) monetary policy rule.

Selecting models that feature *adaptive learning* (AL) in expectation formation allows to choose a value of constant gain as well as an arbitrary subset of variables, which agents would use for forecasting forward-looking variables. Plotting these AL-models together with the rational expectations counterparts allows for direct comparison and analysis of the gain coming from learning.

Another possibility is to focus on one model and run multiple simulations with different monetary policy rules. The *one model, many policy rules* option can be applied to rational expectations and adaptive learning models.



What is new?

- New website: macromodelbase.com
 - Interface for submission of codes to MMB to render MMB self-expanding
 - MMB forum for discussion about model replications and comparisons
- Release of MMB 2.3
 - Linux and Mac compatible versions
 - 21 new models that capture various financial market aspects and/or frictions such as sticky information and search in the labor market

In Numbers

The MMB 2.3 features an extended menu of:

- **Exercises to perform:**
 - One policy rule, many models
 - One model, many policy rules
- **Models to choose from:** (114)
 - Calibrated models (32)
 - Estimated US models (45)
 - Estimated Euro Area models (12)
 - Calibrated or estimated multi-country models (8)
 - Estimated other country models (6)
 - Models with adaptive learning (11)
- **Monetary policy rules to choose from:**
 - Common policy rules (9)
 - User-specified policy rule
 - Model-specific policy rule

In addition, MMB offers the possibility for studying individual models in detail under their model-specific rules and shocks.

Future Steps

The MMCI intends to implement several ideas in the near future:

- Including more models with detailed modeling of financial and/or fiscal sector
- Integrating an online comparison platform into our new MMCI-website
- Completing transition of MMB towards open-source software
- Expanding the CEPR research network (by regular conferences)
- Promoting the PhD seminar on macroeconomic modeling