

Assignment 7

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Model Comparison of Implementable Rules (Likelihood Race)

Do

- Run ‘[NKlinear_Est_***.mod](#)’ (replace *** with “All,” “None,” “Habit,” “Index”) using Implementable Rule
- Run ‘modelcomparison.m’

Results

	Model All	Model Habit	Model Index	Model None
LogLik	-60.27	-63.53	-73.77	-69.60
Prob.	0.9627	0.0372	0.0000	0.0001

Discussion

This table displays the log-likelihood for each of the model specification. After calibrating to the data available, it is clear that a model with all ingredients (that is, with external habit in preferences and inflation indexing) yields the highest probability among the four models considered. Thinking about the data, we often see hump-shaped impulse response functions (with the peak delayed several quarters). This form of IRF implies that there is substantial friction within the economy. According to our analysis, external habit is most likely the main contributor for such dynamics, but it needs additional friction (such as inflation indexing) to justify the patterns we observe in the data.

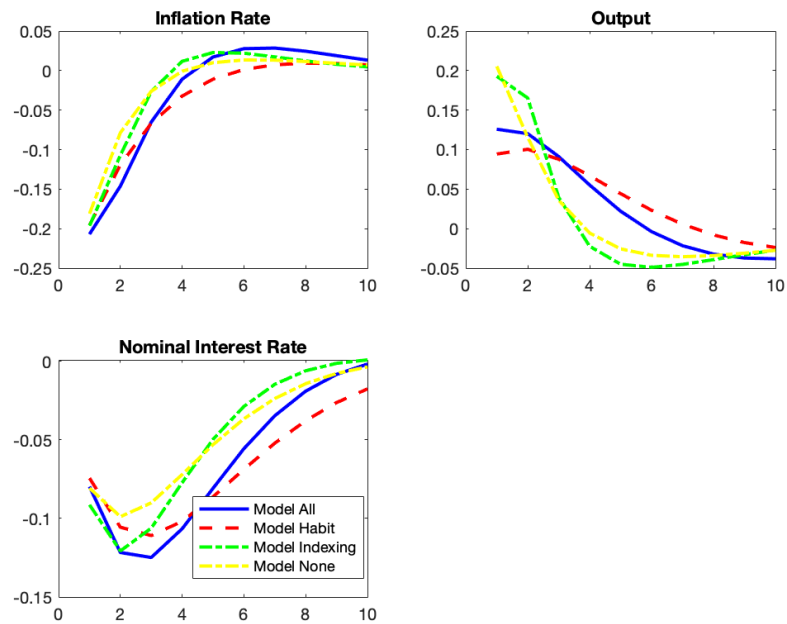
Model Comparison of Implementable Rules (ACF & IRF)

Do

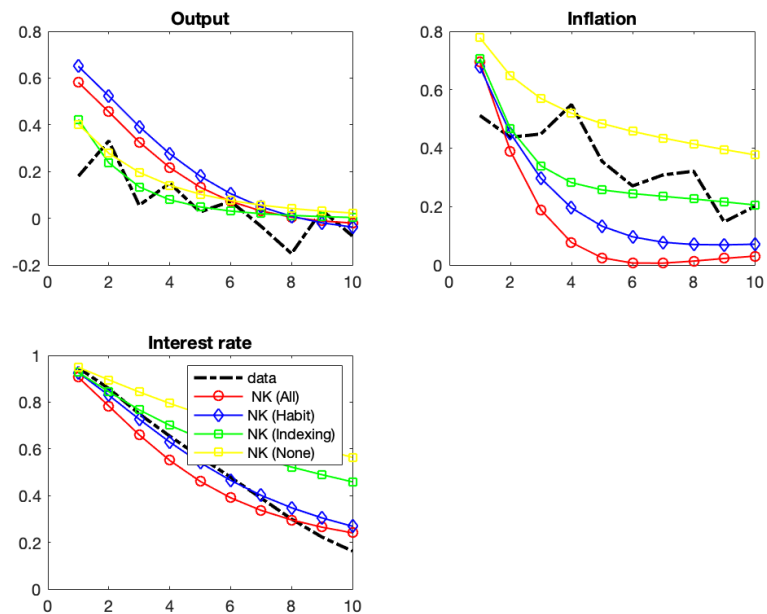
- Run 'irfs_plot.m' and 'acfs_plot.m'

Results

- <IRFs.png>



- <ACFs-plot.png>



Discussion

The first figure illustrates the IRFs of the varying models in face of a positive TFP shock. The bottom figure illustrates the ACFs of the varying models, compared to observed data. Unlike the conclusion we found earlier (the ALL model is the best one of the four), Solely looking at the ACFs, this distinction may not be as clear. Looking at the ACF of output, None and Indexing performs the best; looking at Inflation ACF, we see that Indexing might have the best performance. For Interest rate ACF, Habit and All perform better than the other two, Habit being the best.

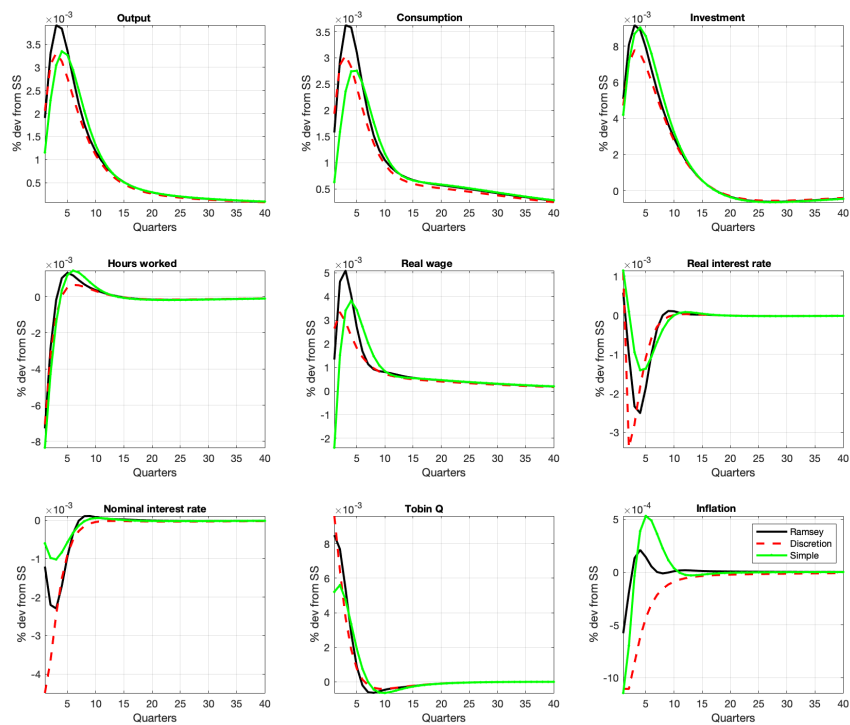
Optimal Policy

Do

- Run “
 - *Make sure to replace 16 to 32 in all instances*

Results

- `<Shock-TFP.png>`



Discussion

This figure illustrates various optimal policies for the NK model. We see that overall, the more conservative simple rule yields the least volatility in face of an exogenous shock. Moreover, the response of the economy under a simple rule is slightly lagged.