Volume Title: NBER Macroeconomics Annual 2007, Volume 22

Volume Author/Editor: Daron Acemoglu, Kenneth Rogoff and Michael Woodford, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 978-0-226-00202-6

Volume URL: http://www.nber.org/books/acem07-1

Conference Date: March 30-31, 2007

Publication Date: June 2008

Chapter Title: Discussion of chapter 2

Chapter Author: Daron Acemoglu, Kenneth Rogoff, Michael Woodford

Chapter URL: http://www.nber.org/chapters/c6418

Chapter pages in book: (p. 165 - 167)

Discussion

The participants generally agreed on the methodological contribution of the paper and comments were largely focused on clarifications, refinements, and extensions.

The discussion was initiated by Michael Woodford, who, while underscoring the desirability of estimating models that allow for the possibility of drifting parameters, was puzzled by some of the results reported. Woodford echoed Frank Schorfheide's comments that it would be useful if the authors could discuss the features of the data that are producing these results. Specifically, Woodford questioned the plausibility of the inflation target being almost always below the actual inflation rate. He was also puzzled by the magnitude of the time-varying inflation sensitivity of the Fed's policy rule, which is much higher than results from more naive approaches that estimate separate Taylor rules for the different time periods. Rubio-Ramírez pointed out that some of the papers obtaining lower estimates use strong priors, whereas this paper uses flat priors, and so the confidence intervals around the parameters are very big. Finally, Woodford pointed out that the paper shows less indexation in the 1970s and early 1980s than before or after, but if one looked only at estimates of the degree of persistence of the inflation process, one would find *more* structural inertia in the 1970s and early 1980s than before or after.

Nobuhiro Kiyotaki indicated that recent micro studies have found no indexation on prices and only some indexation on wages. Hence, he argued that if the model requires the indexation degree to change in order to fit the data, then there must be something wrong with the model, since there is no indexation in micro data. Kiyotaki also suggested that if the Calvo pricing parameter might change, then one natural approach might be to use a slightly more flexible model, such as Ricardo Reis's stochastic alarm clock model.

Mark Gertler noted that the parameter that he would worry the most about as not being structural is the indexation parameter. He pointed out that while existing research has found that the Calvo parameter does change, it does not have first order effects on model behavior. Galí and Gertler (2000) show that in a steady state world with idiosyncratic shocks, the idiosyncratic shocks dominate the frequency of price adjustment. On the other hand, there is a big effect on the indexing parameter, which soaks up lagged inflation prior to 1979 but which approaches zero in the recent sample of low and stable inflation. One interpretation is that during regime shifts the agents are learning about trend inflation, so the model cannot fit well under the strong form of rational expectations. Gertler also referenced Schorfheide's earlier discussion of labor-supply shocks and his own work with Galí and Lopez-Salido (2002), and offered countercyclical markups as another interpretation, which he felt was straightforward and plausible.

In response to Woodford's and Gertler's comments, Jesus Fernández-Villaverde agreed that more work was needed to better understand the data and to demystify the results of black box DSGE models in general. Regarding micro evidence on indexation, Villaverde argued that historically, indexation clauses in the United States were very state contingent, and the nature of different contracts changed substantially during the 1970s. As a result, existing accounts of labor contracts in the United States did not add up to a "neat historical corroborating story" on indexation.

Ricardo Reis suggested that in the plots the authors show not just the estimates but also the confidence bands. Rubio-Ramírez agreed and noted that the authors are working on an efficient algorithm to compute the evolution of standard errors over time.

Daron Acemoglu pushed for a deeper conceptual approach, in which the structural parameters that are allowed to be time varying in the paper actually become structural functions. While the paper's approach may be econometrically the most feasible, Acemoglu argued that from a conceptual point of view it would be more natural to specify the observables that determine the evolution of the endogenous parameters and then estimate that bigger model. Ramírez found Acemoglu's comment very interesting and noted that it would be a natural next step. Villaverde concurred, saying that there are still a lot of things to be explored. He pointed to a simple example in the paper, in which the discount factor is a weighted mean of the discount factors of different generations and responds to changes in the demographic structure of the economy.

John Fernald expressed concern about the strong structure imposed

and asked how some of the simplifications in the data and in the model might be showing up. For example, if the model approximates the U.S. economy as a closed economy, but then forces the model to fit the data, where do movements in the current account show up?

John Kennan sought further clarification on the drift in the Taylor rule. He pointed out that the setup allows private agents to reoptimize in response to this drift, but not the monetary authority. Kennan wondered if the change in the parameters is coming from a change in the inflation-output tradeoff, from a change in the policy regime, or from the drift in the parameters in the price adjustment process, to which the coefficients of the Taylor rule respond. Villaverde replied that the authors would indeed like to incorporate specific reasons for which the policy rule may evolve over time, either due to political economy considerations or reflecting learning on the part of the monetary authorities.

Villaverde also responded to concerns about identification and about the structure imposed. He admitted he wished he knew more about the effects of many of the parametric assumptions. He likened the experience to trying to find your way in a dark and unfamiliar room, but viewed it more as an opportunity than a setback.

Responding to concerns raised by both discussants, Ramírez concluded the discussion by stressing the computational challenges of allowing more than one parameter to move at a time. He argued that the paper's approach was the most sensible as a first step, but that they would now start thinking about allowing pairs of parameters to move. Villaverde added that while his coauthor is worried about the computation, he is more worried about the data. Given approximately 200 observations, he felt that they have already substantially tortured the data and have probably already "violated a lot of human rights conventions."