COMMENT ON SARGENT/WILLIAMS/ZHA

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1. OUTLINE

- The paper tells an interesting and complex story.
- Though it differs from several other recent econometric historical studies of monetary policy in the last 50 years, there are aspects of consensus in this literature that run counter to widely held beliefs.
- The particular story told here is in many respects quite implausible.
- We should expect that good econometrics will trace out our uncertainty about this history, not give us a unique explanation: inflation rose, and fell. In some sense this is just one observation, or maybe two.

2. THE STORY: POLICY MAKERS SLOWLY LEARNED THAT THEY SHOULD STOP INFLATION

- Primiceri makes this story work in a model where policy-makers use all the data available to them, discounting past data at a moderate rate (a 10-year half-life). He, like this paper, assumes direct control without delay by policy over a variable we know it cannot directly control — in his case, a component of real activity, in this paper a component of inflation.
- Papers that have recognized that the Fed controls interest rates, and thereby affects inflation and output with substantial delay, have not been able to match these papers' conclusions.
- As this paper puts it, the interpretation is reached by "using cross-equation restrictions".
- Another way to put it is to say that, if you can't get the Phillips curve to move in ways that expain the inflation by assuming it was estimated by policy-makers from the data, insist that it nonetheless must explain what happened to inflation.
- We "fit" a Phillips curve in large part by insisting that it move in such a way that policy makers would have *wanted* to make inflation behave as it did.

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- In Primiceri (chapter 2) the cross-equation restrictions are a gentle tug. In this paper, the natural rate Phillips curve is estimated to have very little effect of even surprise inflation on unemployment. The only way the story can be told is to insist that the Fed was so mistrustful of historical data, and so confident that there was in fact an exploitable Phillips curve, that its estimates, and therefore its policies, moved around drastically despite the absence of much connection of inflation with unemployment in the data.
- This is a story about the Fed creating inflation because bad theory led them to mistrust the data too much.

3. Good econometrics — as opposed to revealed theory — could have prevented the inflation of the 70's?

- The lesson I drew from my 1988 paper was that Kalman filter, time-varying parameter, models of the Phillips Curve that did not embody natural rate theory could easily produce near-Ramsey results even if natural rate theory were true. This, I argued, showed that careful fitting of only approximately correct, relatively unrestricted, models could lead to good outcomes.
- This paper, Chung, and previous work by these authors, imply that if policy induced the great inflation, it did so without the assistance of careful econometrics. This paper succeeds in explaining the rise and fall of inflation only by assuming that policy makers shifted their beliefs about parameters of the Phillips curve much more readily than could have been justified by estimating the degree of parameter volatility from the data.
- The paper estimates V, the covariance matrix of parameter changes, but assumes that policy makers do *not* estimate it. Indeed, the paper shows that if they did so, one could not explain the observed historical pattern of inflation. This confirms the earlier work that showed that with reasonable data-based estimates of V in hand, policy-makers would have understood the low return to inflation too early to have allowed the sharp rise of inflation in the late 70's.

4. What's so unreasonable about V?

Ratio of square roots of diagonals of V to $P1|0$:

π_0	π_1	u_1	π_2	u_2	const
0.87	0.65	2.52	0.23	7.93	16.44

End of sample Phillips curve coefficients and std.dev.'s of change:

	π_0	π_1	u_1	π_2	u_2	const
coefficient	−7.59	−2.33	−1.28	10.58	−0.67	13.81
std. dev. of change	2.87	2.85	1.73	1.79	2.27	50.88

Correlations of parameter changes:

	π_0	π_1	u_1	π_2	u_2	const
π_0	1.00	−0.95	0.19	0.97	−0.13	−0.28
π_1	−0.95	1.00	0.01	−1.00	0.30	0.47
u_1	0.19	0.01	1.00	0.04	0.95	0.82
π_2	0.97	−1.00	0.04	1.00	−0.26	−0.44
u_2	−0.13	0.30	0.95	−0.26	1.00	0.87
const	−0.28	0.47	0.82	−0.44	0.87	1.00

5. INSTABILITY

- The estimates imply that from August 1973 through December 1974 the Fed believed that, if it did not make precise month-by-month stabilizing changes in inflation, the unemployment rate would undergo oscillations of period 2 that would explode at the rate of 7 to 10 per cent per month. The coefficients on lagged unemployment imply instability.
- This is a crucial period for the model. Figure 7 shows that the perceived cost in steady state unemployment of maintaining 2% inflation is very high during this period. But it is not clear what this can mean, since the coefficients imply that any steady rate of inflation would result in explosive oscillations.
- Figures 13 and 15 show that these 73-74 estimates underly one of the two periods (out of four) where the model's forecasts outdo the BVAR forecasts.

6. PARADOX OF VOLATILITY COEXISTENT WITH CERTAINTY EQUIVALENCE

Would policy makers who believed the Phillips curve was this unstable take action as if its current estimates were permanent and known with certainty?

7. END OF SAMPLE SIMULATIONS

- Figure 20 shows convergence to Ramsey — over *millenia*.
- It begins, at each initial condition, with wild oscillations in inflation (perhaps worse than the graphs make them appear, since the graphs seem to be truncated at +14% and -2% inflation) that last 80-200 years.
- Nothing like this is observed in the sample, and this is not a plausible prediction. This is a symptom of the model's weak fit to the data

8. MODEL FIT

- The model is compared in fit to BVAR's and does substantially better.

- Zha and I, Cogley and Sargent, and Primiceri have all documented that structural VAR's fit much better, indeed by the order of magnitude in improvement found between BVAR's and the model in this paper, when stochastic volatility is allowed for.
- A reduced form VAR with stochastic volatility is not nearly so difficult to estimate and to check for fit with MHM as the SVAR's in this previous literature, and that would be a more realistic standard of fit.
- I suspect that the large V helps fit by making one-step-ahead prediction error be dominated by parameter uncertainty, and thereby making it rise with the level of inflation.
- The improved MHM method for obtaining marginal data densities is a clever and important idea.
- The method is new and untested, though, and the model is itself highly nonlinear. The absence of detailed convergence diagnostics is therefore highly regrettable. When replicating calculations for an MCMC paper is as difficult as it would be with this paper, it is irresponsible to present work without at least describing trace plots of simulations and several of the standard serial-correlation-corrected measures of Monte Carlo standard errors.

9. CONCLUSION?

- I like the story in Sims-Zha best: The inflation did not primarily originate in monetarypolicy. No change in monetary policy is required to explain why it ended. It could have been avoided, at a non-negligible cost in lost output growth, by much more stringent monetary policy, but it is not clear that that would have been a better policy.
- That story is backed up by quite plausible model estimates and historical counterfactual simulations.
- That story recognizes that the Fed does not control inflation or aggregate activity directly.
- Everyone seems to agree now, though, that history can be explained without any "regime change". A rational public would have had a consistent probability model for Fed behavior throughout this period.