

Discussion of "Tech. Shocks and the Response of
Hours Worked: Time-Varying Dynamics Matter"
by Luca Gambetti (UPF, UniMO)

Discussant: Efrem Castelnuovo (UniPD)

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Context

- Do hours rise or fall after a positive tech. shock? Huge discussion in the literature!
- If hours fall, standard RBC model not supported by the data! "Survivors": NK model, RBC with habits and capital adj. costs, RBC with slow tech. change ... viceversa is viceversa.
- Existing literature (VARs analysis): contrasting results. If hours in log-levels: rise vs. if in growth rates: fall. Scary!
- Misspecified VARs: Does time-variation matter? Luca's exercise: YES!

Luca's considerations & empirical strategy

- Breaks in labor market (composition of hours worked, participation rates) and productivity trends , in the CB's reaction coefficients
- Fix coefficient model ill-suited for capturing such breaks. Alternative: time-varying parameter framework

$$y_t = X_t' \theta_t + \varepsilon_t, \theta_t = F \theta_{t-1} + u_t$$

- LR identification: only tech. shock affect long-run labor prod.
- Bayesian estimation, sim. posterior distribution (MCMC, Gibbs sampler)

Specification, data, and output

- Two main specifications:

$$y_t^{Biv} = [\gamma_{lab.prod.}, f(hours/L)]'$$

$$y_t^{R\pi} = [\gamma_{lab.prod.}, R_t, \pi_t, f(hours/L)]'$$

- Data: U.S., 1954Q4-2003Q3
- Output: Impulse response functions, conditional correlation/variance analysis

Luca's results

- TVC-VAR suggest that hours FALL after a positive tech. shock under both specifications (at least up to early '90s). Quite robust result!
- Fixed coefficient VAR fails to capture instabilities between labor productivity and levels of hours worked.
- Aggregate tech. shocks just explain 11 – 25% of the business cycle variation; when investm.-spec. technology shocks added, % remarkably raises.

Luca's results (cont'd)

- Standard RBC model fails. Further discriminations: W/P in VARs favor NK (as opposed to RBC with habits and capital adj. costs); C/Y does not behave as the slow tech. change RBC model would suggest.
- Changes in the transmission of MP shocks not driven by monetary policy.

Questions and Quibbles

- TVC-VAR vs. "unfrequent, sharp breaks" modeling.
- Important, omitted variables: K .
- Sign restrictions: Identification and Inference.
- Reaction coefficients vs. preferences of the CB.

TVC-VAR vs. "unfrequent, sharp breaks" modeling

- Labor productivity breaks: early '70s, mid '90s; Instability in the Taylor rule coefficients: end of the '70s for most of the TR literature, a few more breaks in some papers (e.g. yours).
- Fernald: Detrending with breaks taken into account, fixed coefficient VAR: Hours fall not matter what their specification is!
- Question: How much does TVC-VAR analysis add to Fernald (2005)'s?

Important, omitted variables: K (specification issue)

- Analysis on tech. shocks with VARs typically concentrate on flow variables who display much faster adjustment than the stocks.
- Fry and Pagan (2005): Warning on the distortions coming from the omission of K ! VAR process may become a VARMA.
- What if VAR re-estimated with K in the vector? Results robust?

Sign restrictions: Identification and Inference

- Castelnuovo and Surico (2005) show that a monetary policy shock behaves pretty much like a tech. shock in a misspecified (no inflation expectations) VAR: Ability to distinguish between technological and monetary policy shock pre-'80s?
- Fry and Pagan (2005): Givens rotations, orthogonal shocks per each vector $[\theta_1, \dots, \theta_n]$, but ... what when you go for the mean/median? Unlikely to have orthogonal shocks there! Fry and Pagan (2005)'s correction for tackling this issue (if any).

Reaction coefficients vs. preferences of the CB

- Taylor rule coefficients: Convolution of i) CB's preferences and ii) structural parameters of the economy in an Optimal Control Problem with Simple Rules (OCPSR).
- OCPSR with an output gap driven inflation rate (Phillips curve): reaction to the output gap even if you are a Strict Inflation Targeter (Svensson, 1999) ... TR coefficients are not preferences.

But don't get me wrong!

- Great paper! It makes a convincing point in a pretty relevant and lively discussion ...
- ... and it triggers other research on the role of technology shocks, e.g. why have they been less and less contractionary since the early '90s?