

Discussion of “Just-in-Time Inventories, Business Cycles, and the Great Moderation”

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- A very interesting paper
- Tackling an outstanding (and now also long-standing) question in macroeconomics: what is the reason for the “Great Moderation”?
- This paper is focused on the role of inventories

Great Moderation: Facts and Explanation

- Marked decline in volatility of output occurring right around 1984 (Kim and Nelson, 1999; McConnell and Perez-Quiros, 2000)
- Great Recession seems more of a blip than a return to high volatility (Clark, 2014)
- Potential explanations:
 - ① Better monetary policy: Clarida, Gali, and Gertler (2000)
 - ② “Good luck”: Stock and Watson (2003)
 - ③ Inventories: Kahn, McConnell, and Perez-Quiros (2002)

What this paper does

- Builds a NK DSGE model to study role of inventories
- Two variations on model that differ in terms of who holds inventories
 - ① Final goods producers hold inventories (both of final goods and intermediate goods)
 - ② Just-in-time: final goods producers hold no inventories, all held by intermediate producers
- Basic premise: structural change represented by movement from (1) to (2)
- Address two related but different questions: can inventories be a “source” of business cycles? Can the emergence of just-in-time inventories be responsible for the Great Moderation?

What this paper finds

- In “benchmark” model (no JIT), very high stock-out avoidance cost can result in oscillatory dynamics
 - Not exactly a “source” of cycles, but induces “cycle-like” dynamics in response to other shocks (complex eigenvalues)
- In JIT model, you do not get oscillatory dynamics, even with very high stock-out avoidance cost
- Conclusion: movement to JIT may result in stabilization if stock-out avoidance cost very high

Where does that leave things?

- Authors argue that parameter giving rise to oscillatory dynamics in “benchmark” model is implausibly large
- Without these oscillatory dynamics, movement to JIT doesn't seem to do a whole lot
- No moments reported, just IRFs. Since Great Moderation typically measured in terms of moments, need to report these. How much reduction in output volatility would you get?
- Wild guesses:
 - With high stock-out avoidance cost, probably do get a big reduction in output volatility. But you would probably get way too much volatility in “benchmark” model. We also don't tend to see high frequency oscillatory dynamics in empirically estimated IRFs
 - Without high cost, probably not very much change judging from IRFs

- Great Moderation not just about decline in output volatility
 - ① Decline in volatility of inflation
 - ② Increase in relative volatility of hours/employment
 - ③ Decline in cyclicality of average labor productivity
 - ④ Increase in cyclicality of inflation

Volatilities, Pre- and Post-Moderation

Volatility	Full	1948-1983	1984-2014	Late/Early
Y^{HP}	1.67	2.03	1.10	0.54
L^{HP}	1.95	2.10	1.78	0.85
ΔY	0.97	1.19	0.62	0.52
ΔL	0.92	1.05	0.73	0.71
π	0.63	0.78	0.25	0.32

- Big *increase* in *relative* volatility of hours
- Big *decline* in volatility of inflation

Correlations, Pre- and Post-Moderation

Correlation	Full	1948-1983	1984-2014	Late-Early
$\rho(Y^{HP}, APL^{HP})$	0.40	0.55	-0.07	-0.62
$\rho(L^{HP}, APL^{HP})$	-0.05	0.19	-0.54	-0.73
$\rho(Y^{HP}, \pi)$	0.17	0.18	0.39	0.17
$\rho(\Delta Y, \Delta APL)$	0.65	0.71	0.48	-0.23
$\rho(\Delta L, \Delta APL)$	0.03	0.17	-0.32	-0.49
$\rho(\Delta Y, \pi)$	-0.11	-0.17	0.09	0.28

- *Large declines in cyclicality of average labor productivity*
- Non-trivial increase in cyclicality of inflation

Inventories and the Great Moderation

- These changes in other aggregate moments may offer clues about reasons behind decline in aggregate output volatility
- Just looking at moments, seems like smaller productivity shocks go in the right direction (e.g. “good luck”)
- What role would inventory management have? Not obvious (to me) that it can match these other moments
- But you could compute all these moments in your model and see what you get