IT Spillovers in TFP

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May 29, 2018

Topics of today's discussion

1. Model solution related questions.
   - How should be Ef_x?
   - Is the first partial derivative times the related state or just the first partial derivative?
2. Constructing a conceptually correct GDP and TFP.
3. Initial results for the VECM.
4. Different identification procedures and their correlations.

(2) Constructing a conceptually correct GDP and TFP

Oulton (2010) defines GDP as follows

$$G\hat{D}P = (1-w)\hat{y_c} + w\hat{y_i} \quad \text{where} \quad w = \frac{py_i}{y_c + py_i}$$

- Can we use w in s.s.?

Moreover,

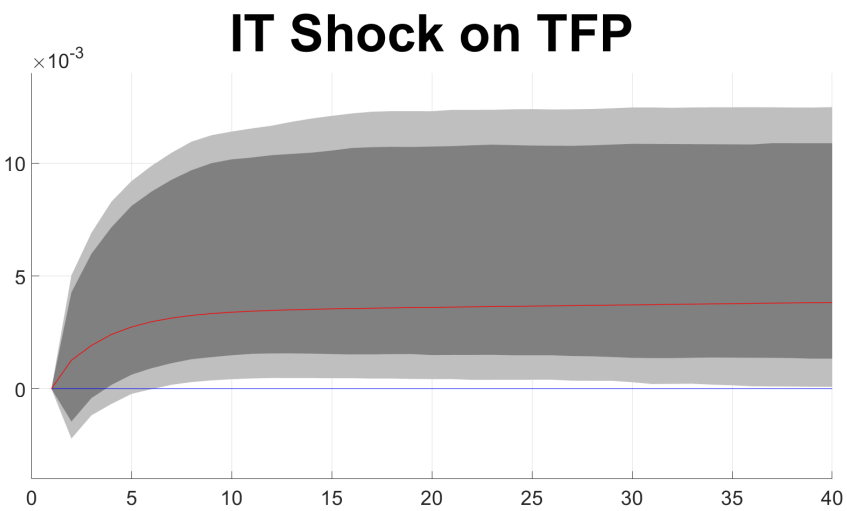
$$T\hat{F}P = (1-w)\,T\hat{F}P_c + w\,T\hat{F}P_i$$

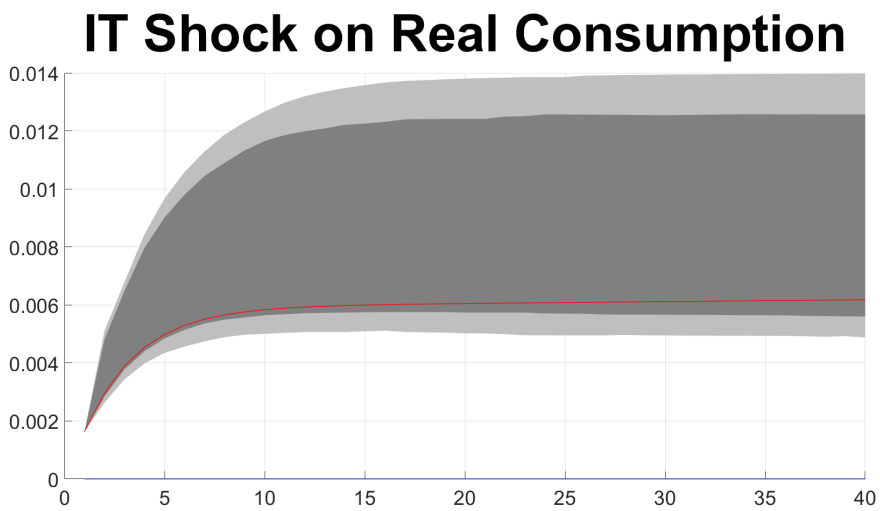
(3) VECM

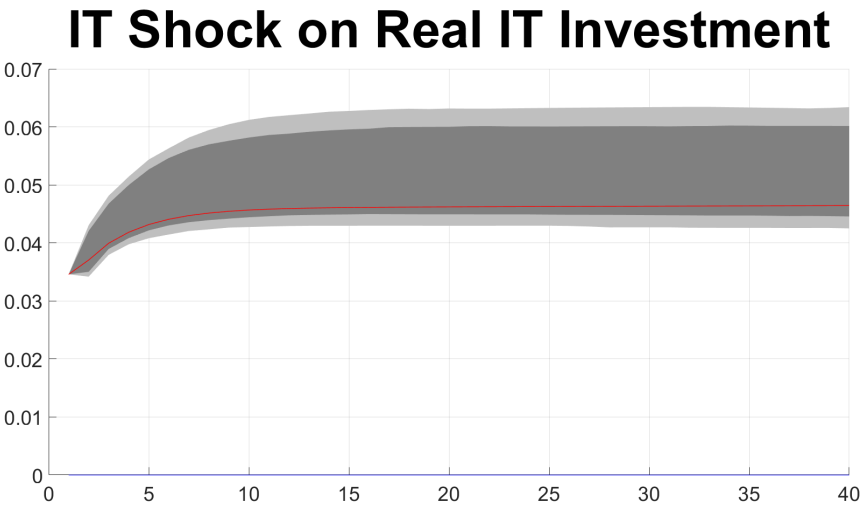
Number of cointegrating vectors is 1 as indicated by Johansen's trace test.

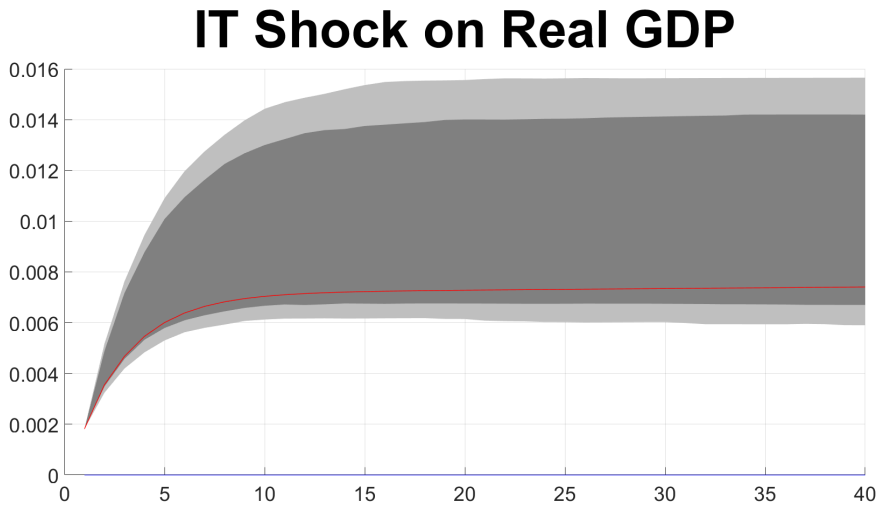
Identification strategy: rotation of shocks that maximizes the impact effect on IT investment s.t. a 0 impact response on TFP.

(3) VECM


IT Shock on TFP
×10^-3
10
5
0
0 5 10 15 20 25 30 35 40


IT Shock on Real Consumption
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0 5 10 15 20 25 30 35 40


IT Shock on Real IT Investment
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0 5 10 15 20 25 30 35 40


IT Shock on Real GDP
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
0 5 10 15 20 25 30 35 40

(4) Different identification procedures and their correlations.

Two step-identification procedure.

1. Identify the news shock a la Barsky-Sims subject to some constraint suggested by the theoretical model.
   - Limiting the response of relative prices to a news shock.
   - Zero-impact response of IT to a news shock.

2. Identify the IT shock as the one that maximizes the impact effect on IT investment s.t. a 0 impact response on TFP.

Note. This is the only identification procedure you have not seen so far.

Quick overview of identification procedures

1. “Old news" identification: Identify news shock and IT shock a la Barsky & Sims, s.t. a 0 on relative prices.
2. “just IT" identification: identify an IT shock only as a rotation of shocks that maximizes the impact effect on IT investment s.t. a 0 impact effect on TFP.
3. “two-step just IT”: the new one presented above.

Structural shock series

S.1	S.2	S.3
1.0000	0.6392	0.6180
0.6392	1.0000	0.8359
0.6180	0.8359	1.0000

Correlations